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CEAREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 January 15, 1931 No. 1
Personnel (Jan. 1-15) and Field Station (Dec. 16-31) Issue

PERSONNEL ITEMS

Mr. B. B. Bayles, associate agronomist in western wheat investigations at Arlington Experiment Farm, Rosslyn, Va., left on January 4 for Madison, Wis., to confer with experiment station and Department personnel and to make use of special greenhouse facilities for physiological research on cereals. Mr. Bayles will be away about five weeks.

Mr. John J. Curtis, junior agronomist in the cooperative investigations with wheat and other small grains at the U. S. Dry-Land Field Station, Akron, Colo., arrived in Washington on January 8 to confer with members of the Office staff, to compile data, and write his annual report. Mr. Curtis will be in Washington about 30 days.

Dr. E. F. Gaines, cerealist at the Washington State College of Agriculture, and agent in the cooperative experiments in the breeding of wheats for resistance to stinking smut, who has been on six months leave of absence in Europe, arrived in Washington on January 2. After conferring with Office personnel he left on January 13 for his headquarters at Pullman, Wash.

Mr. Roy E. Hutchison was appointed agent, effective January 1, to assist in the cereal experiments conducted in cooperation with the Oregon Agricultural Experiment Station at Burns, Oreg.

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Mr. M. A. McCall, principal agronomist in charge, left Washington on January 11 for a two-weeks trip to points in New York, Michigan, Illinois, Wisconsin, Minnesota, North Dakota, Nebraska, Kansas, and Missouri to confer with officials of State agricultural experiment stations relative to cooperative investigations on cereals and cereal diseases.

Dr. K. S. Quisenberry, associate agronomist in western wheat investigations, spent two days at Ithaca, N. Y., in studying laboratory and experimental grain storage facilities and conferring with officials of the agricultural experiment station.

Mr. D. E. Stephens, superintendent of the Sherman County Branch Station, Moro, Oreg., arrived in Washington on January 10. He will assist the Offices of Dry-Land Agriculture and Cereal Crops and Diseases in compiling data on the cooperative field experiments. He will prepare manuscripts and confer with Department officials during his stay of about two months.

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MANUSCRIPTS AND PUBLICATIONS

Galley proof of Farmers' Bulletin 1659 entitled "Oats in the Northeastern States," by T. R. Stanton and F. A. Coffman, was read on January 7.

An article entitled "Some Questions and Answers on Cold Injury to Corn," by J. R. Holbert and W. L. Burlison, has been published as Illinois Farmers' Institute [Unnumbered Bul. 1], 14 pp., 1930. (This paper is a summary of the discussion that followed a lantern slide lecture on the subject before the annual meeting of the Illinois State Farmers' Institute at Galesburg, Ill., in February, 1930.

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry
Washington

B.P.I. Memo. 552. December 18, 1930.

MEMORANDUM TO HEADS OF OFFICES.

Gentlemen:

The Traffic Office of the Department has called to our attention the fact that large shipments are being made by express which apparently could be made by freight with a resultant material saving. Various shipments are cited where the express charges are large, whereas the freight on these same items would have been less than one-fifth of the express charge. Most of these shipments were made by employees in this Bureau from various points in the field to Washington. As a result of this, we are now required to furnish reports on all express shipments exceeding 100 pounds, and this is submitted to the Federal Traffic Board for its consideration.

It is appreciated that frequently the shipment by express of plant material or other supplies or equipment is highly desirable either because of an urgent unforeseen need or because of the character of the consignment. However, in every case careful consideration should be given to shipments of this sort in order that they may be held to a minimum. Every effort should be made to foresee needs for supplies and equipment which could safely be shipped by freight instead of by express. Where an express shipment of any size is made, the papers concerned should show clearly and convincingly the necessity for so doing.

Very sincerely,

Wm. A. Taylor,

Chief of Bureau.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, V. F. Tapke, Acting in Charge)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)(Jan. 7)

Weather conditions in December were about normal. The total rainfall was 3.51 inches, rain occurring on 11 days.

The absolute maximum temperature was 73 degrees F. and the minimum 28 degrees F. Ice occurred on 4 days.

The precipitation for the year was 55.20 inches, which is 12.95 inches less than in 1929, and 0.98 of an inch less than the 20-year average.

The absolute maximum temperature for the year was 103 degrees F. and was recorded on June 27. This is the highest temperature recorded at this Station in the 21 years that weather records have been kept. The absolute minimum for the year was 19 degrees F. and occurred January 18.

Frequent rains and little drying weather have delayed farm work during the month. There was sufficient good weather, however, to permit some farmers to complete threshing. A few fields of rice remain unthreshed on account of lack of drainage or lack of equipment.

The rice market remains unsatisfactory, except for long-grain varieties.

Work on the Station advanced slowly in December. Plowing was begun on the 7th, but on account of frequent rains at least one-third of the farm remains to be plowed.

The outstanding feature of the month was the purchase by the Louisiana State University of 51 acres of land immediately west of the Station. This gives the Station a total of 111 acres.

Visitors during the month were Dean C. T. Dowell and Mr. M. R. Coe, Bureau of Chemistry and Soils, U. S. Department of Agriculture, Washington, D. C.

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

ARKANSAS

Agricultural Experiment Station, Fayetteville (Rice Diseases, E. C. Tullis)

MISSOURI

Agricultural Experiment Station, Columbia (Rice Agronomy, B. M. King).

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

OHIO

Agricultural Experiment Station, Wooster (Corn Investigations, G. H. Stringfield)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

INDIANA

Purdue University Agricultural Experiment Station, LaFayette (Corn Rots and Metallic Poisoning, J. F. Trost, Acting in Charge)

Purdue University Agricultural Experiment Station, LaFayette (Leaf Rusts, R. M. Caldwell)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)(M. N. Levine)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, C. C. Allison)

GREAT PLAINS AREA (South to North)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(Dec. 15)

The first half of December was relatively mild and open. There was a light snowfall on the night of December 14, which may be of a little benefit to winter grains.

The grain sorghum plots have been threshed but have not yet been recleaned for final yield weights. However, yields will be low, as previously known.

Yields of the broomcorn date-varietal experiment are as follows:

Yield in pounds per acre, good brush, 1930

Variety	C. I. No.	May 26	June 9	June 23	Av.
Scarborough Dwarf	817	170	291	370	278
Black Spanish	827	373	271	196	280
Evergreen Standard	583	170	318	257	248
Oklahoma Dwarf	599	245	335	342	307
Acme	243	252	356	276	295

NOTE: The yields for each date of Scarborough Dwarf are the average of three plots; the other varietal plots were duplicated on each date.

The minimum temperature for the first half of December was 24 degrees on the 6th and 7th; the maximum was 64 degrees on the 9th. The precipitation was 0.16 of an inch.

(Jan. 5)

The last half of December was comparatively mild, one light snow having fallen.

Winter grains sown in October appear green although top growth is not up to the average.

Results from the grain sorghum date-varietal experiment are shown in the following table. Each figure is the average of two guarded 2-row plots, with the exception of Grohoma which was not duplicated on account of shortage of seed.

Variety	C. I. No.	Date seeded			Yield (Bu. per acre)a/
		May 26	June 9	June 23	Av.
Beaver milo	871	8.0	20.4	20.6	16.3
Dwarf Yellow milo	332	15.6	28.0	27.8	23.8
Fargo milo	809	5.9	21.5	13.5	13.6
Standard feterita	182	14.9	17.5	19.8	17.4
Spur feterita	623	10.9	20.0	18.3	16.4
Dwarf feterita	182-1	10.3	12.2	11.2	11.2
Dwarf hegari	750	2.5	5.1	0.9	2.8
Chiltex	874	14.9	17.5	26.1	19.5
Early Red kafir	866	12.2	14.9	19.8	15.6
Pink kafir	432	8.8	13.9	13.3	12.0
Dawn kafir	340	10.9	9.9	20.2	13.7
Sunrise kafir	472	11.4	13.9	16.2	13.8
Reed kafir	628	14.7	18.7	18.5	17.3
Sharon kafir	813	5.5	14.5	15.2	11.7
Standard Blackhull kafir	71	6.5	14.1	8.2	9.6
Bishop kafir	814	8.0	18.7	14.9	13.9
Darso	615	13.7	11.8	15.9	13.8
Grohoma	920	3.4	12.6	8.8	8.3

a/ Fifty-six pounds to the bushel.

The minimum temperature for the last half of December was 17 degrees on the 28th; the maximum was 58 degrees on the 25th. The precipitation was 0.23 of an inch, or 0.49 of an inch for the month.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Fort Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon)

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (Jan. 2)

The unfavorable outlook for winter wheat on account of fall drought was materially changed by precipitation totaling 3.3 inches soon after the middle of November. Since then only a trace of snow has fallen. Temperatures so far have been mostly above normal, the minimum of 11 degrees having been recorded on December 29.

Artificial freezing tests reveal that considerable hardening to cold has been developed by wheat plants in the field despite the absence of zero temperatures. Air temperatures of -17 degrees F. for a 24-hour period have recently been employed in freezing field-grown flats of wheat to produce differential killing in varietal comparisons. In these flats the soil mass is only about 3-1/2 inches thick, and usually reaches the air temperature before the end of the freezing period.

Hessian fly counts on 111 nursery wheats in a special seeding made September 16 were completed early in December. Of the varieties concerned, Kawvale was outstanding for its resistance, having an average of only 0.12 flaxseed per plant, while Crimean Selection (No. 143) occupied the other extreme with an average of 16.16 flaxseed per plant. It was an interesting fact that several nursery strains seem superior to the fairly resistant Blackhull varieties.

Table 1 presents the most widely known varieties in the group.

Table 1. Hessian fly infestation in a selected group of wheats from a special nursery, Lincoln, Nebr. December, 1930. (Results based on 25 plants of each variety.)

Variety	C. I. No.	Plants infested	Tillers infested[a]	Av. no. of flaxseed per plant
		(Per cent)	(Per cent)	
Prelude x Kanred	8336	100	67	12.52
Minturki	6155	96	66	11.28
Kanred	5146	100	54	10.60
Nebraska No. 60	6250	96	33	10.36
Crimean Selection No. 50	3335	100	53	10.28
Kharkof Hays No. 2	6686	100	61	6.40
Kharkof	1442	63	37	5.96
Tenmarq	6936	30	23	5.34
Oro	8220	33	56	5.20
Early Blackhull	8856	72	35	3.34
Blackhull	6251	67	33	3.63
Kawvale	8180	4	2	.12

[a] An attempt to discard late tillers produced as a result of a mid-October rain was made but with questionable success. Consequently, the relative accuracy of this column may be somewhat distorted.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden)

Belle Fourche Field Station, Newell (Beyer Aune, Office of Western Irrigation Agriculture)(Dec. 17)

The acre yields of flax varieties and of safflower grown in triplicate plots under irrigation at Newell in 1930 were as follows:

Variety	C. I. No.	Yield (Bu. per acre)	Test Weight Lbs.
Rio (L. 79)	230	11.2	54
Bison	389	10.2	53
Primost	25	9.6	55
Linota	244	9.4	55
Redwing	320	9.0	55
Winona	179	8.7	55
Safflower	---	6.2a/	45

a/ Safflower calculated at 45 pounds a bushel.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (Jan. 2)

The flax F_1 hybrid plants in the greenhouse average over a foot in height and appear healthy but have not yet put out any flower buds. The electric light is turned on every evening at sunset and is automatically shut off at 11 p.m.

Exceptionally mild temperatures and low precipitation prevailed in December. No temperature below 2 degrees occurred after December 1, when -1 degree was recorded. The average daily maximum temperature was 30 degrees, and the average daily minimum 14 degrees.

The total precipitation for December was 0.13 of an inch, recorded on December 2 and 3. Light flurries of snow fell on several other days but amounted to only a trace of precipitation in each case. Total precipitation for the year was 17.33 inches, which is 1.47 inches more than the average annual precipitation for the past 17 years.

The maximum temperature in December was 44 degrees, on December 3, and the minimum -1 degree, on December 1.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (Dec. 15)

Comparatively mild weather prevailed during the first half of December. The temperature has not yet reached zero. About 3 inches of snow fell December 2. Most of this has since melted. A light snow fell last week, making about 2 inches on the ground now. The winter grain has been protected by a light snow covering since the beginning of the month. During that time the soil temperature at a depth of 2 inches has been about 24 degrees most of the time, varying only a few degrees from that point during the first half of the month.

Some of the results obtained to date with leading varieties in the smut nursery are given below. The percentages of smutted heads were obtained from plants grown from seed inoculated with covered smut, *Tilletia levis*.

Annual and average percentages of smutted heads in spring-wheat varieties and hybrids grown from bunt-inoculated seed on the Dickinson Substation during part or all of the years from 1926 to 1930, inclusive.

Variety	Percentages of smutted heads					Average	
	1926	1927	1928	1929	1930	5-yr. 1926-1930	4-yr. 1927-1930
Hard spring							
Turkey x Florence G334	0	0	0	0	2	0.4	
Quality	1	15	12	3	5	3	
Marquillo	6	20	7	6	12	10	
Reliance	12	22	24	6	11	15	
Garnet	0	26	31	15	13	13	
Marquis (Av. checks)	4	21	24	27	36	22	
Red Fife	3	24	26	26	37	23	
Haynes	1	32	25	34	32	25	
Ruby	1	27	31	43	39	28	
Preston	5	35	24	37	60	33	
Power	7	30	41	44	51	35	
Reward	0	36	61	34	43	35	
Marquis x Kota (1656.84)	1	51	53	42	33	37	
Marquis x Kota (1656.97	3	66	46	41	61	44	
Kota	21	55	74	52	76	56	
Ceres (Av. checks)	22	51	63	59	61	51	
Ulka No. 1	34	34	77	34	95	35	
Webster	13	32	15	-	60	-	

Variety	Percentages of smutted heads 1926	1927	1928	1929	1930	Average 5-yr. 1926-1930	4-yr. 1927-1930
Durum							
Mondak	0	19	7	2	2	6	
Akrona	0	13	12	4	1	6	
Mindum	1	9	11	10	7	8	
Monad	5	19	14	13	15	13	
Kubanka C. I. 1440	0	13	8	7	42	14	
Pentad	0	16	13	24	12	14	
Nodak	9	17	7	9	34	15	
Kubanka Sel. 132	-	14	6	51	6	-	
Kahla	0	22	5	1	-	-	
Hope			1	0	0.5	-	0.4
Reliance Sel. 7	-	1	5	21	3	-	9
Axminster	-	7	5	14	3	-	9
Kota x Kanred B11-1-1	-	9	26	10	33	-	20
Reliance Sel. 16	-	13	13	12	15	-	16
Reliance Sel. 22	-	15	16	18	17	-	17
Reliance Sel. 64	-	11	18	37	27	-	23
Kanred x Mq. B9-11-50	-	17	27	24	32	-	25
B9-14-42	-	35	39	32	53	-	40
Hurdsfield	-	17	42	45	62	-	42
Supreme	-	21	46	45	60	-	43

(Jan. 3)

Comparatively mild winter weather prevailed in December. The maximum temperature was 47 degrees on the 9th, and the only below-zero weather was 7 below on the 20th. The total precipitation was 0.37 of an inch, or slightly less than 4 inches of snow. The normal snowfall for December is about 5 inches. The mean temperature for the month was 21.6 degrees, or about 4.3 degrees above normal.

The soil temperature at a depth of 2 inches, as recorded with a soil thermograph in the winter-wheat nursery, ranged from 17 to 28 degrees, with a mean of about 23 degrees. The ground was protected by about 2 inches of snow most of the month, although plowed fields and roads are bare.

The total precipitation for 1930 was 13.79 inches as compared with a normal of 15.56 inches for the Substation.

Agricultural Experiment Station, State College Station, Fargo (Flax Diseases, L. W. Boyle)

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, L. L. Davis) (Jan. 5)

December was a very cold month. The average minimum temperature was 1.3 degrees above zero. The lowest temperature recorded was -17 degrees on December 25, 27, and 28. The average maximum temperature was 22.5 degrees. The highest temperature recorded for the month was 35 degrees on December 5 and 11. The snowfall for the month totaled 6.5 inches.

Dry-land winter wheat probably is not injured because it was well established before the cold weather, and has an abundant snow cover.

Agricultural Experiment Station, Moscow (Wheat Improvement, V. H. Florell)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)(W. K. Smith)

Agricultural Experiment Station, Pullman (Stinking Smuts of Wheat, H. H. Flor)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague)

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement. R. W. Woodward)(Dec. 31)

The first snowfall, amounting to about 6 inches, was recorded November 18. Zero to subzero weather has prevailed ever since, an unusually prolonged period of cold weather. The mean temperature for the past month has varied from -23 to 26 degrees F.

The precipitation for the period from January 1 to November 21, inclusive, 1930, as recorded at the Greenville Station, is given herewith through the courtesy of Prof. D. W. Pittman, Associate Agronomist.

	Inches		Inches
January	2.00	July	1.95
February	1.99	August	3.02
March	1.65	September	1.95
April	1.32	October	2.36
May	2.23	November 1-21	.38
June	.23	TOTAL	20.58

The average annual rainfall for the period 1920-1929 was 17.13 inches.

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, J. W. Jones)

University Farm, Davis (Cereal Agronomy, G. A. Wiebe)

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel)(Jan. 9)

The cereal nursery seedings at Tucson, Sacaton, and Mesa have been completed. The nursery at Tucson was completed on January 2. For the following two days a total of 0.58 of an inch of precipitation was recorded. This probably will insure prompt and uniform germination.

In the month of December there were 10 days in which temperatures of 32 degrees or below were recorded. The minimum temperature for December was 20 degrees. The total precipitation for the month was 0.29 of an inch.

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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 January 31, 1931 No. 2
Personnel (Jan. 16-31) and General Issue

PERSONNEL ITEMS

Mr. R. H. Bamberg, agent in charge of the cereal pathology garden at University Farm, St. Paul, Minn., spent one week in Washington, conferring with members of the Office staff regarding cereal-disease investigations. Mr. Bamberg returned to St. Paul on January 27.

Mr. G. H. Banks, assistant director in charge of the Rice Branch Experiment Station, Stuttgart, Ark., has been appointed collaborator, to assist in cooperative rice investigations and to have general oversight of cooperative rice experiments conducted at that point.

Mr. W. M. Bever, junior pathologist in the cooperative stripe-rust investigations conducted at Moscow, Idaho, has been authorized to make a 7-week trip in the interests of rust research. He will visit Manhattan, Kans., Ames, Iowa, St. Paul, Minn., and Washington, D. C. While in Washington he will prepare manuscripts and consult with members of the Office staff regarding future plans for the work.

Dr. H. B. Humphrey, senior pathologist in charge of cereal-rust investigations, left Washington on January 27 to visit points in Indiana, Iowa, Kansas, Minnesota, and Wisconsin, where he will consult with experiment station and Bureau officials concerning cereal rusts, inspect greenhouse and laboratory work, and examine reports and manuscripts on cereal rusts.

Mr. J. W. Jones has been transferred to Washington, D. C., from Biggs, Calif., where for the past 12 years he has been superintendent in charge of the Rice Field Station. Mr. Jones is to have charge of the project on rice production and improvement, with work in all of the rice producing areas of the country. As noted in the September 30, 1930, number of the Cereal Courier, the rice work of the Office has been reorganized under two projects, one on rice production and improvement, under the leadership of Mr. Jones, and the other concerned with rice technology, under the leadership of Mr. C. E. Chambliss.

Mr. J. W. Jones, senior agronomist in charge of rice production and improvement, left Washington on January 31 for Louisiana and Georgia to confer with experiment station officials regarding a regional rice-improvement program. He also will attend the meetings of the Association of Southern Agricultural Workers at Atlanta, Ga., on February 4 and 5. Mr. Jones will be away about 10 days.

Mr. M. A. McCall, principal agronomist in charge, returned to Washington on January 22 from a 2-week trip to points in New York, Michigan, Illinois, Wisconsin, Minnesota, North Dakota, Nebraska, Kansas, and Missouri. Mr. McCall left Washington on January 31 for a 10-day trip to Louisiana and Georgia to confer with experiment station officials regarding plans for a regional rice-improvement program. He also will attend the meetings of the Association of Southern Agricultural Workers at Atlanta, Ga., on February 4 and 5.

Mr. G. M. Smith, assistant pathologist in the cereal-disease investigations conducted in cooperation with the Purdue University Agricultural Experiment Station, LaFayette, Ind., attended the meetings of the National Canners' Association in Chicago, Ill., on January 20-21.

Mr. J. L. Sutherland, junior agronomist in the cooperative investigations of wheat and other small grains at the Judith Basin Substation, Moccasin, Mont., arrived in Washington on January 17 to confer with Department personnel, assist in compiling data, and write his report of the previous year's work. Mr. Sutherland will be in Washington about 30 days.

Mr. R. W. Woodward, junior agronomist in the cooperative wheat breeding experiments at Logan, Utah, arrived in Washington on January 23 to confer with members of the Office staff, to compile data, and write his annual report. Mr. Woodward will be in Washington about 30 days.

Mr. R. N. Wyche, superintendent of Substation No. 4 at Beaumont, Texas, has been appointed collaborator, to assist in cooperative rice investigations and to have general supervision of rice experiments conducted cooperatively at that substation.

VISITORS

Mr. H. J. C. Umberger, dean and director of the Division of Extension, Kansas State Agricultural College, Manhattan, Kans., was an Office visitor on January 29.

MANUSCRIPTS AND PUBLICATIONS

1 A manuscript entitled "Correlation Between Yields of Winter Wheat Varieties Grown in Various Locations in the Columbia Basin of Oregon," by J. Foster Martin and D. E. Stephens, was approved on January 27 for submittal to the Journal of the American Society of Agronomy.

2 A manuscript entitled "*Cercosporella herpotrichoides* Fron, the Cause of the Columbia Basin Footrot of Winter Wheat," by Roderick Sprague, was approved on January 30 for submittal to Science.

3 A manuscript entitled "Corn Breeding and the 1930 Drought," by F. D. Richey and M. T. Jenkins, was submitted on January 30 for publication in the Yearbook of Agriculture 1931.

Galley proof of the article entitled "Freezing-Point Depression and Specific Conductivity of Sorghum Tissue Fluids," by John H. Martin, J. Arthur Harris, and Ivan D. Jones, for publication in the Journal of Agricultural Research, was read on January 23.

Galley proof of the article entitled "Effect of Depth of Seeding on the Occurrence of Covered and Loose Smuts in Winter Barley," by J. W. Taylor and Marion Griffiths Zehner, for publication in the Journal of the American Society of Agronomy, was read on January 27.

The article entitled "Effect of Leaf Rust Infection on Yield of Certain Varieties of Wheat," by C. O. Johnston, appears in the Journal of the American Society of Agronomy 23(1): 1-12. January, 1931. (Cooperation between the Office of Cereal Crops and Diseases and the Kansas State Agricultural College.)

The article entitled "Some New or Unusual Disease Developments on Wheat in Kansas," by C. O. Johnston, appears in the Transactions of the Kansas Academy of Science, Vol. 33, pp. 31-40. 1930. (Cooperation between the department of botany and plant pathology of the Kansas State Agricultural College, and the Office of Cereal Crops and Diseases.)

ANNUAL REPORT OF PUBLICATIONS AND MANUSCRIPTS

OFFICE OF CEREAL CROPS AND DISEASES

Calendar Year, 1930

In the calendar year 1930, 95 articles, papers, and abstracts were published in the various series of Department publications, in publications of cooperating State agricultural organizations, and in private journals. In the same period 105 manuscripts were submitted for publication, 10 of which were abstracts that were only mimeographed. There remained in press as of December 31, 1930, 54 manuscripts with the dates indicated: 1930, 52; 1929, 1; 1928, 1.

GENERAL OR MISCELLANEOUS

Humphrey, Harry B. Diseases of Cereal Crops in Pan America. Documentary Material on the Inter-American Conference on Agriculture, Forestry, and Animal Industry, Sept. 8 to 20, 1930, p. 237-242. [September, 1930.]

Johnston, C. O. Some New or Unusual Disease Developments on Wheat in Kansas. Kans. Acad. Sci. Trans., vol. 33, pp. 31-40. 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Kansas State Agricultural College.)

Leighty, C. E. Improvement of the Small Grains in the United States. The Inter-American Conference on Agriculture, Forestry and Animal Industry, 6-page pamphlet. [Mimeographed.] [September, 1930.] Also 8-page pamphlet in Spanish.

Leukel, R. W. Relation of Dust Fungicides to Flow of Small Grains through Drills and to Drill Injury. U. S. Dept. Agr. Circ. 119, 10 p. July, 1930.

Longley, A. E., and W. J. Sando, Nuclear Divisions in the Pollen Mother Cells of Triticum, Aegilops, and Secale and their Hybrids. Jour. Agr. Research 40(8): 683-719, pls. 1-4, figs. 1-9. April 15, 1930. (Informal cooperation between the Office of Cereal Crops and Diseases and the Biophysical Laboratory, Bureau of Plant Industry.)

Ranker, Emery R. Apparatus and Method for Obtaining Sterile Filtrates of Biological Fluids. Phytopathology 20(7): 569-573, figs. 1-2. July, 1930.

Richey, Frederick D. Some Applications of Statistical Methods to Agronomic Experiments. Jour. Amer. Statis. Assoc. 25(n.s.171): 269-283. September, 1930. (Presented in part before the Round Table of Biology, at the annual meeting of the American Statistical Association, Washington, D. C., December 30, 1929.)

Spillman, William J., and William J. Sando. Mendelian Factors in the Cowpea (Vigna species). Mich. Acad. Sci., Arts, and Letters Papers 11(1929): 249-283, figs. 4-6. 1930.

Sprague, Roderick. Notes on Phyllosticta rabei on chick-pea. Phytopathology 20(7): 591-593. July, 1930. (The work discussed in this paper was done before Dr. Sprague entered the Office of Cereal Crops and Diseases.)

Stadler, L. J. Chromosome Number and the Mutation Rate in Avena and Triticum. Natl. Acad. Sci. Proc. 15(12): 876-881. December, 1929. (Cooperation between the Office of Cereal Crops and Diseases and the Missouri Agricultural Experiment Station.) [Received in Department library, Jan. 4, 1930.]

Swanson, A. F. A Useful Holder for Plat Stake Labels. (Note.) Jour. Amer. Soc. Agron. 22(2): 188-189. February, 1930.

Taylor, J. W., and J.H. Martin. Height of Stubble and Straw Yields of Small Grains. Jour. Amer. Soc. Agron. 22(11): 963-967, figs. 1-2. November, 1930.

AGRONOMIC SUBJECTS

Barley

Harlan, Harry V., and Mary L. Martini. Earliness in F1 Barley Hybrids. Jour. Heredity 20(12): 557-560, figs. 10-11. December, 1929. (Cooperation between the Office of Cereal Crops and Diseases and the Idaho Agricultural Experiment Station.) [Received February 3, 1930.]

Martini, Mary L., H. V. Harlan, and Merritt N. Pope. Some Growth Curves of Barley Kernels. Plant Physiol. 5(2): 263-272, figs. 1-3. April, 1930.

Taylor, J. W. and Marion Griffiths Zehner. The Effect of a Seed Disinfectant on Grain and Straw Yields and Smut Control in Winter Barley. Jour. Amer. Soc. Agron. 22(2): 113-123, fig. 1. February, 1930.

Corn

Brunson, Arthur M. Corn Breeding. Kans. State Bd. Agr. [Quart.] Rpt. 48(191) (Corn in Kansas): 73-80, illus. 1929. (Cooperation between the Office of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.) [Received in 1930.]

Jenkins, Merle T. Heritable Characters of Maize XXXIV---Rootless. Jour. Heredity 21(2): 79-80, fig. 14. February, 1930. (The data on which this paper is based were obtained in connection with the corn breeding program conducted by the Office of Cereal Crops and Diseases, United States Department of Agriculture, and the Farm Crops Section, Iowa Agricultural Experiment Station, cooperating.)

______________ and Martin A. Bell. The Inheritance, Interactions and Linkage Relations of Genes Causing Yellow Seedlings in Maize. Genetics 15(3): 253-282. May, 1930. (The data on which this paper is based were obtained in connection with the corn breeding program conducted by the Office of Cereal Crops and Diseases, United States Department of Agriculture, and the Farm Crops Section, Iowa Agricultural Experiment Station, cooperating.)

Koehler, Benjamin, and James R. Holbert. Corn Diseases in Illinois. Ill. Agr. Expt. Sta. Bul. 354, 164 p., 5 col. pls., 71 figs. September, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Illinois Agricultural Experiment Station.)

Kyle, C. H. Relation Between the Vigor of the Corn Plant and its Susceptibility to Smut (*Ustilago zeae*). Jour. Agr. Research 41(3): 221-231. August 1, 1930.

Meyers, Marion T. Determining the Date of Silking in Experiments with Corn. Jour. Amer. Soc. Agron. 22(3): 280-283, figs. 1-2. March, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Ohio Agricultural Experiment Station and the Ohio State University.)

Richey, F. D. Maize Breeding. Documentary Material on Conference on Agriculture, Forestry and Animal Industry, September 8 to 20, 1930, p. 231-235. [September, 1930.]

Robinson, Joe L. and A. A. Bryan. Iowa Corn Yield Test. Results for 1929. Iowa Corn and Small Grain Growers' Assoc. Report No. 10, pp. 31-44, figs. 1-8. March, 1930. (Cooperation between the Iowa Corn and Small Grain Growers' Association and the Iowa Agricultural Experiment Station and the Office of Cereal Crops and Diseases.)

Sayre, J. D. Accumulated Iron in the Nodes of Corn Plants. Plant Physiol. 5(3): 393-396, pl. iii. July, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the departments of botany and of agronomy of the Ohio Agricultural Experiment Station.)

Sprague, G. F. Some Genetic Effects of Electromagnetic Treatments in Maize. (Abs.) Anat. Rec. 47(3): 332. December 25, 1930.

Stadler, L. J. The Frequency of Mutation of Specific Genes in Maize. (Abs.) Anat. Rec. 47(3): 381. December 25, 1930.

Stadler, L. J. Recovery Following Genetic Deficiency in Maize. Natl. Acad. Sci. Proc. 16(11): 714-720. November, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Missouri Agricultural Experiment Station.)

Trost, John F. The Outlook for Hybrid Corn in Indiana. Thirtieth Ann. Rpt. Indiana Corn Growers' Assoc., p. 47-52. 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Purdue University Agricultural Experiment Station.)

Flax

Arny, A. C., E. C. Stakman, H. A. Rodenhiser, Clyde McKee, Elmer A. Starch, H. L. Bolley, H. L. Walster, T. E. Stoa, A. N. Hume, and A. C. Dillman. Flax Facts. Minn. Ext. Spec. Bul. 128, 31 p. February, 1930. [Also N. Dak. Ext. Circ. 90; Montana Ext. Bul. 107; and S. Dak. Ext. Circ. 293.] (Cooperation between the Office of Cereal Crops and Diseases and the Minnesota, Montana, North Dakota, and South Dakota Agricultural Experiment Stations.)

Dillman, Arthur C. Harvesting Flax with Combine Succeeds in Northern Great Plains. Yearbook of Agriculture 1930: 305-308, fig. 97. 1930.

________________ Hygroscopic Moisture of Flax Seed and Wheat and its Relation to Combine Harvesting. Jour. Amer. Soc. Agron. 22(1): 51-74, figs. 1-11. January, 1930.

Dillman, A. C. and E. A. Starch. Flaxseed Production by Power Farming Methods in the Northern Great Plains. Farmers' Bulletin 1650, 17 p., 11 figs. November, 1930. (Cooperation between the Montana Agricultural Experiment Station and the Office of Cereal Crops and Diseases.)

Grain Sorghum and Broomcorn

Martin, John H. The Comparative Drought Resistance of Sorghums and Corn. Jour. Amer. Soc. Agron. 22(12): 993-1003. December, 1930.

______________ and R. S. Washburn. Broomcorn Growing and Handling. U. S. Dept. Agr. Farmers' Bul. 1631, 37 p., 24 figs. September, 1930. (Survey conducted by the Bureaus of Plant Industry and Agricultural Economics in cooperation with the Illinois and Kansas agricultural experiment stations.)

Sieglinger, John B. Tenuous Kafir Plants. Jour. Heredity 20(12): 565-566, fig. 13. December, 1929. [Received February 3, 1930.]

Swanson, Arthur F. Variability of Grain Sorghum Yields as Influenced by Size, Shape, and Number of Plats. Jour. Amer. Soc. Agron. 22(10): 833-838. October, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.)

______________ and R. E. Getty. Chemical Seed Treatments for Sorghums. Jour. Amer. Soc. Agron. 22(5): 472-475. May, 1930. (Joint contribution from the Office of Cereal Crops and Diseases and the Office of Forage Crops and Diseases, Bureau of Plant Industry, and the Kansas Agricultural Experiment Station.)

Oats

Coffman, F. A. and G. A. Wiebe. Unusual Crossing in Oats at Aberdeen, Idaho. Jour. Amer. Soc. Agron. 22(3): 245-250, fig. 1. March, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Idaho Agricultural Experiment Station.)

______________ and G. A. Wiebe. Hybrid Vigor in Oats. Jour. Amer. Soc. Agron. 22(10): 848-860. October, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Idaho Agricultural Experiment Station.)

Murphy, H. C. and T. R. Stanton. Oat Varieties Highly Resistant to Crown Rust. (Note.) Jour. Amer. Soc. Agron. 22(6):573-574. June, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Iowa and Kansas agricultural experiment stations.)

Stanton, T. R. and F. A. Coffman. Oats of Fulghum Variety Win Place in Southern States. Yearbook of Agriculture 1930: 398-400. 1930.

______________ and F. A. Coffman, V. F. Tapke, G. A. Wiebe, R. W. Smith, and B. B. Bayles. Influence of Hulling the Caryopsis on Covered-Smut Infection and Related Phenomena in Oats. Jour. Agr. Research 41(8): 621-633. October 15, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Iowa, North Dakota, Montana, Idaho, and Oregon agricultural experiment stations.)

Rice

Jenkins, J. Mitchell. Report of the Rice Experiment Station for the years 1923-1929. Louisiana Agr. Expt. Sta. Bul. 205: 3-12. March, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Louisiana Agricultural Experiment Station.)

Jones, Jenkin W. Inheritance of Anthocyan Pigmentation in Rice. Jour. Agr. Research 40(12): 1105-1128. June 15, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

______________ Sterility in Rice Hybrids. Jour. Amer. Soc. Agron. 22(10): 861-867. October, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

Wheat

Clark, J. Allen. Varieties of Hard Red Spring Wheat. U. S. Dept. Agr. Farmers' Bul. 1621, 26 p., 16 figs. May, 1930.

______________ Registration of Improved Wheat Varieties, V. Jour. Amer. Soc. Agron. 22(12): 1041-1042. December, 1930.

McFadden, Edgar S. A Successful Transfer of Emmer Characters to Vulgare Wheat. Jour. Amer. Soc. Agron. 22(12): 1020-1034. December, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the South Dakota Agricultural Experiment Station.)

McKinney, H. H. and W. J. Sando. The Behavior of Winter Wheat in Artificial Environments. Science 71(1852): 668-670. June 27, 1930.

Quisenberry, Karl S. and J. Allen Clark. Hardiness and Yield of Winter Wheat Varieties. U. S. Dept. Circ. 141, 30 p., 2 figs. December, 1930.

PATHOLOGIC SUBJECTS

Sac and Imperfect Fungi

Dickson, Allan D., Karl P. Link, B. H. Roche, and James G. Dickson. Report on the Emetic Substances in Gibberella-Infected Barley. (Abs.) Phytopathology 20(1): 132. January, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

Dickson, James G. Barley Scab Effectively Controlled by Rotations and Clean Fall Plowing. Yearbook of Agriculture 1930: 126-127. 1930. (Yearbook Separate 1146.)

______________, R. G. Shands, P. E. Hoppe, Helen Johann, and E. B. Mains. Progress Report on Barley and Wheat Scab. (Abs.) Phytopathology 20(1): 131. January, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station and the Purdue University Agricultural Experiment Station.)

Fellows, Hurley. Wheat Take-All Symptoms Compared with Injuries Caused by Chinch Bugs. Phytopathology 20(11): 907-909, figs. 1-2. November, 1930. (Cooperative investigations between the department of botany and plant pathology, Kansas State Agricultural College, and the Office of Cereal Crops and Diseases.)

Hauge, Sigfred M. and John F. Trost. An Inheritance Study of the Distribution of Vitamin A in Maize. III. Vitamin A Content in Relation to Yellow Endosperm. Jour. Biol. Chem. 36(1): 167-172. March, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Purdue University Agricultural Experiment Station.)

Holbert, J. R. Cold Resistance and Susceptibility in Corn. (Abs.) Phytopathology 20(1): 117-118. January, 1930. (Cooperation between the Office of Cereal Crops and Diseases, the Funk Bros. Seed Co., and the Illinois Agricultural Experiment Station.)

Holbert, J. R. and W. L. Burlison. Some Questions and Answers on Cold Injury to Corn. Ill. Farmers' Inst. [Unnumbered Bul. 1] 14 pp., 1930.

Koehler, Benjamin and James R. Holbert. Corn Diseases in Illinois. Ill. Agr. Expt. Sta. Bul. 354, 164 p., 5 col. pls., 71 figs. September, 1930. (Cooperation between the Illinois Agricultural Experiment Station and Funk Bros. Seed Co., and the Office of Cereal Crops and Diseases.)

Roche, B. H., G. Bohstedt, and James G. Dickson. Feeding Scab-Infected Barley. (Abs.) Phytopathology 20(1): 132. January, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

Rodenhiser, H. A. Physiologic Specialization in *Phlyctaena linicola* (Abs.) Phytopathology 20(1): 144-145. January, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Minnesota Agricultural Experiment Station.)

________________ Physiologic Specialization and Mutation in *Phlyctaena linicola* Speg. Phytopathology 20(12): 931-942, figs. 1-4. December, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Minnesota Agricultural Experiment Station.)

Shands, R. G., P. E. Hoppe, and E. B. Mains. Report upon Scab-Resistant Cereal Varieties. (Abs.) Phytopathology 20(1): 132-133. January, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Purdue University Agricultural Experiment Station and the Wisconsin Agricultural Experiment Station.)

Virus Diseases

McKinney, H. H. A Mosaic of Wheat Transmissible to All Cereal Species in the Tribe Hordeae. Jour. Agr. Research 40(6): 547-556, figs. 1-3. March 15, 1930. (The studies reported were conducted in part in cooperation with the Wisconsin Agricultural Experiment Station during the seven years that the writer was stationed there.)

Rusts

Allen, Ruth F. A Cytological Study of Heterothallism in *Puccinia graminis*. Jour. Agr. Research 40(7): 585-614, pls. 1-17. April 1, 1930. (Cooperative investigations between the Office of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

________________ Heterothallism in *Puccinia coronata*. Science 72(1873): 536. November 21, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

Cotter, Ralph U. Factors Affecting the Development of the Aecial Stage of *Puccinia graminis*. (Abs.) Phytopathology 20(1): 139. January, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Minnesota Agricultural Experiment Station.)

Dietz, S. M. and L. D. Leach. Methods of Eradicating Buckthorn (Rhamnus) Susceptible to Crown Rust (Puccinia coronata) of Oats. U. S. Dept. Agr. Circ. 133, 15 p., 6 figs. [December] 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Iowa Agricultural Experiment Station.)

____________ and H. C. Murphy. Inheritance of Resistance to Puccinia coronata avenae p. f. III. (Abs.) Phytopathology 20(1): 120. January, 1930. (Cooperation between the Iowa Agricultural Experiment Station and the Office of Cereal Crops and Diseases.)

Henry, A. W. Inheritance of Immunity from Flax Rust. Phytopathology 20(9): 707-721, figs. 1-2. September, 1930. (Cooperative investigations between the Minnesota Agricultural Experiment Station and the offices of Cereal Crops and Diseases and Fiber Plants, Bureau of Plant Industry.)

Humphrey, H. B. and R. O. Cromwell. Stripe Rust (Puccinia glumarum) on Wheat in Argentina. Phytopathology 20(12): 931-936. December, 1930.

Johnston, C. O. An Aberrant Physiologic Form of Puccinia triticina Eriks. Phytopathology 20(8): 609-620, fig. 1. August, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.)

Levine, M. N. and E. C. Stakman. Black Stem Rust of Cereals Has More Than 60 Physiologic Forms. Yearbook of Agriculture 1930: 137-140. 1930. (Yearbook Separate 1135.)

____________, E. C. Stakman, and T. R. Stanton. Field Studies on the Rust Resistance of Oat Varieties. U. S. Dept. Agr. Tech. Bul. 143, 36 p., 4 figs. February, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Minnesota Agricultural Experiment Station.)

Mains, E. B. Effect of Leaf Rust (Puccinia triticina Eriks.) on Yield of Wheat. Jour. Agr. Research 40(5): 417-446, figs. 1-6. March 1, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Purdue University Agricultural Experiment Station.)

____________ Host Specialization of Barley Leaf Rust, Puccinia anomala. Phytopathology 20(11): 873-882, figs. 1-3. November, 1930. (Cooperative investigations between the Purdue University Agricultural Experiment Station and the Office of Cereal Crops and Diseases.)

Murphy, H. C. Physiologic Specialization in Puccinia coronata avenae. (Abs.) Phytopathology 20(1): 143-144. January, 1930. (Cooperation between the Iowa Agricultural Experiment Station and the Office of Cereal Crops and Diseases.)

Stakman, E. C., M. N. Levine, and R. U. Cotter. Hybridization and Mutation in Puccinia graminis. (Abs.) Phytopathology 20(1): 113. January, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Minnesota Agricultural Experiment Station.)

Stakman, E. C., M. N. Levine, and R. U. Cotter. Origin of Physiologic Forms of *Puccinia graminis* through Hybridization and Mutation. Sci. Agr. 10(11): 707-720. July, 1930. (Cooperation between the Minnesota Agricultural Experiment Station and the offices of Barberry Eradication and Cereal Crops and Diseases, Bureau of Plant Industry.)

____________ and Lee H. Person, Jr. Wheat Protected from Black Stem Rust by Dusting with Sulphur. Yearbook of Agriculture 1930: 547-548. 1930.

Smuts

Briggs, F. N. Inheritance of the Second Factor for Resistance to Bunt, *Tilletia tritici*, in Hussar Wheat. Jour. Agr. Research 40(3): 225-232, figs. 1-2. February 1, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

____________ Inheritance of Resistance to Bunt, *Tilletia tritici*, in White Odessa Wheat. Jour. Agr. Research 40(4): 353-359, fig. 1. February 15, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

____________ Breeding Wheats Resistant to Bunt by the Back-Cross Method. Jour. Amer. Soc. Agron. 22(3): 239-244. March, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

Ficke, C. H. and C. O. Johnston. Cultural Characteristics of Physiologic Forms of *Sphacelotheca sorghi*. Phytopathology 20(3): 241-249, figs. 1-2. March, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the department of botany and plant pathology of the Kansas State Agricultural College.)

Leukel, R. W. Seed Treatment for Controlling Covered Smut of Barley. U. S. Dept. Agr. Tech. Bul. 207, 23 p., 1 fig. October, 1930.

Melchers, L. E., C. H. Ficke, and C. O. Johnston. Physiologic Specialization in *Sphacelotheca sorghi*. (Abs.) Phytopathology 20(1): 142-143. January, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.)

Ranker, Emery R. Synthetic Nutrient Solutions for Culturing *Ustilago zeae*. Jour. Agr. Research 41(6): 435-443, fig. 1. September 15, 1930.

Ranker, Emery R. The Nature of Smut Resistance in Certain Selfed Lines of Corn as Indicated by Filtration Studies. Jour. Agr. Research 41(8): 613-619, figs. 1-3. October 15, 1930.

Woolman, H. M. Infection Phenomena and Host Reactions Caused by Tilletia tritici in Susceptible and Nonsusceptible Varieties of Wheat. Phytopathology 20(8): 637-652, figs. 1-7. August, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Oregon Agricultural Experiment Station.)

Bacterial Diseases

Elliott, Charlotte. Manual of Bacterial Plant Pathogens. The Williams and Wilkins Co., Baltimore, Md. ix + 360 p. 1930.

__________________ Bacterial Streak Disease of Sorghums. Jour. Agr. Research 40(11): 963-976, pls. 1-2, figs. 1-4. June 1, 1930.

PHYSIOLOGICAL AND CHEMICAL SUBJECTS

Dickson, Allan D., Henry Otterson, and Karl Paul Link. A Method for the Determination of Uronic Acids. Jour. Amer. Chem. Soc. 52(2): 775-779. February, 1930. (Cooperation between the Office of Cereal Crops and Diseases and the Wisconsin Agricultural Experiment Station.)

Hurd-Karrer, Annie May. The Formative Effect of Day Length on Wheat Seedlings. Jour. Maryland Acad. Sci. 1(2): 115-126, figs. 1-5. April, 1930.

__________________ Titration Curves of Etiolated and of Green Wheat Seedlings Reproduced with Buffer Mixtures. Plant Physiol. 5(3): 307-323, figs. 1-6. July, 1930.

Peterson, Paul D. Methods for the Quantitative Extraction and Separation of the Plastid Pigments of Tobacco. Plant Physiol. 5(2): 257-261. April, 1930.

MAR 19 1931

CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 February 15, 1931 No. 3
Personnel (Feb. 1-15) and Field Station (Jan. 16-31) Issue

PERSONNEL ITEMS

Mr. B. B. Bayles returned on February 15 from Madison, Wis. Mr. Bayles spent five weeks at the University of Wisconsin in greenhouse studies on the influence of source of seed on the susceptibility to seedling blight. Mr. Bayles is associate agronomist in wheat investigations.

Mr. J. J. Curtis, junior agronomist in the cooperative investigations with wheat and other small grains in the U. S. Dry-Land Field Station, Akron, Colo., who has been in Washington for the past month, returned to Colorado on February 3.

Dr. E. F. Gaines, professor of genetics in agronomy at the State College of Washington, and agent in the Office of Cereal Crops and Diseases, returned on January 2, 1931, from a six months trip in Europe.

In England, Doctor Gaines' headquarters were at the University of Cambridge, and in Germany at the University of Halle.

In the latter part of July he attended the soils congress in Leningrad and Moscow, U. S. S. R. Later he visited the agricultural experiment stations at Saratov, Otrata-Kubanskaya, and Odessa, returning to England the middle of August to attend the meetings of the International Botanical Congress at Cambridge.

A week was spent in Denmark in the study of plant improvement and visiting seed-testing institutions, and another week at Svalöf and Stockholm in Sweden. In central Germany considerable time was spent in studying seed production, fertilizer production, crop rotations, etc. Doctor Gaines was able to obtain seed samples of new farm crops that may be of value to the various sections of the State of Washington.

Dr. H. B. Humphrey returned to Washington on February 10 from a 2-week trip to points in Indiana, Iowa, Kansas, Minnesota, and Wisconsin, in the interests of cereal-rust investigations.

Mr. J. W. Jones, senior agronomist in charge of rice production and improvement, returned to Washington on February 6 from a 10-day trip to points in Louisiana and Georgia. Mr. Jones attended the meetings of the Association of Southern Agricultural Workers at Atlanta, Ga., on February 4 and 5.

Mr. L. S. Mayer, assistant agronomist in the cooperative corn investigations conducted at Knoxville, Tenn., attended the meetings of the Association of Southern Agricultural Workers at Atlanta, Ga., on February 4 and 5.

Mr. M. A. McCall, principal agronomist in charge, returned to Washington on February 6 from a trip to Louisiana and Georgia. Mr. McCall was in attendance at the meetings of the Association of Southern Agricultural Workers at Atlanta, Ga., on February 4 and 5.

Mr. T. R. Stanton, senior agronomist in charge of oat investigations, went to New York City on February 10 for 3 days to confer with Dr. George M. Reed of the Brooklyn Botanic Garden relative to testing certain oat varieties and hybrids for smut resistance. Plans for the preparation of data for publication also were discussed and projected.

Mr. J. L. Sutherland, junior agronomist in the cooperative investigations of wheat and other small grains at the Judith Basin Substation, Moccasin, Mont., returned to Montana on February 8 after a 30-day stay in Washington.

Dr. E. C. Tullis, agent in the cooperative investigations of rice diseases at Fayetteville, Ark., arrived in Washington on February 9 to confer with members of the Office staff and to prepare manuscripts. Dr. Tullis will return to Arkansas in about 10 days.

Mr. R. W. Woodward, junior agronomist in the cooperative wheat-breeding experiments at Logan, Utah, who has been in Washington since January 23, left for his headquarters on February 14.

VISITORS

Prof. Makoto Hiura, professor of mycology and plant pathology in the Imperial College of Agriculture, Gifu, Japan, spent the period from February 2 to February 12 visiting various offices of the Bureau. Prior to his visits here, he spent about nine months at the University of California, three months at the University of Nebraska, and six months at the University of Wisconsin; he also visited the Iowa State College, the University of Minnesota, the University of Chicago, the University of Illinois, and Purdue University. From Washington, D. C., Professor Hiura will go to New York to visit the Boyce Thompson Institute for Plant Research

Columbia University, the New York Botanical Garden, and the Brooklyn Botanic Garden. From there he will proceed to Boston and then to Cornell University, Ithaca. Later he will sail for Europe to spend some time in several universities. Professor Hiura expects to return to Japan about the middle of June.

MANUSCRIPTS AND PUBLICATIONS

5 A manuscript entitled "Relative Susceptibility of Varieties of Sorghum to Rust," by C. O. Johnston and E. B. Mains, was approved on February 10 for submittal to Phytopathology.

6 A manuscript entitled "Agricultural Development in Russia and Its Relation to European and American Agricultural Problems," by James G. Dickson, was approved on February 11 for publication in the Thirty-Sixth Annual Report of the Illinois Farmers' Institute.

Galley proof of article entitled "Inheritance of Resistance to Bunt, Tilletia tritici, in Hybrids of White Federation and Banner Berkeley Wheats," by Fred N. Briggs, for publication in the Journal of Agricultural Research, was read on February 2.

Colorado Agricultural Experiment Station Bulletin 370 entitled "Oat Varieties in Colorado," by D. W. Robertson, Alvin Kezer, F. A. Coffman, J. F. Brandon, Dwight Koonce, and J. W. Deming, has just been received, bearing date of December, 1930. (Cooperative investigations between the Bureau of Plant Industry, represented by the Offices of Cereal Crops and Diseases and Dry-Land Agriculture, and the Colorado Agricultural Experiment Station).

Colorado Agricultural Experiment Station Bulletin 371 entitled "Barley in Colorado," by D. W. Robertson, Alvin Kezer, F. A. Coffman, J. F. Brandon, Dwight Koonce, and J. W. Deming, has just been received, bearing date of December, 1930. (Cooperative investigations between the Bureau of Plant Industry, represented by the Offices of Cereal Crops and Diseases and Dry-Land Agriculture, and the Colorado Agricultural Experiment Station).

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor) (Feb. 11)

Drought conditions were slightly relieved by a 2-day drizzle early in February, totalling 0.85 of an inch of rain. Little moisture is found below 8 inches in the soil. Generous rains are still needed.

The winter oat crop probably will be a failure, judging by appearances. A fair per cent of winter barley is still alive but the prospects for a crop are very poor. Some winterkilling and more winter injury are evident in winter wheat, but its condition as measured by potential yield is problematical. Very little tillering of plants in the plots is to be seen. There is a sufficient stand in the plots to produce a good crop if spring rains occur and weather conditions in general are at all favorable.

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, V. F. Tapke, Acting in Charge)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (Feb. 7)

Very heavy rains fell in the first two weeks of January. A total precipitation of 3.44 inches for the month was recorded. No rain fell after the 13th. In January, 1930, the total precipitation was 9.66 inches. The 20-year average precipitation is 4.95 inches.

There was very little cold weather in January. The lowest minimum temperature was 30 degrees F., and ice occurred on only 3 days. In January, 1930, the lowest temperature was 19 degrees F., and ice was recorded on 3 days. The absolute maximum temperature was about the same for both years, 75 degrees and 73 degrees F., respectively.

Farmers accomplished very little work until the latter part of the month. They were delayed on account of wet weather, and indecision concerning price of rice in the market.

The price of rice improved in January. The mills were fairly active in the latter part of the month, indicating an increase in the demand for clean rice.

Plowing was completed on the Station the third week in January. Other field work included the mending of fences, cleaning of drainage ditches and levees. Bushes and briars were removed from boundaries of the land recently purchased.

A small house formerly used for servants' quarters and laundry purposes has been remodeled into a garage, laundry room, and wood and coal house.

On January 27, the Superintendent, at the invitation of Crowley Association of Commerce, took part in a radio program over Station KFDM, Beaumont, Tex.

Dean C. T. Dowell was a visitor on January 13.

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

ARKANSAS

Agricultural Experiment Station, Fayetteville (Rice Diseases, E. C. Tullis)

MISSOURI

Agricultural Experiment Station, Columbia (Rice Agronomy, B. M. King)

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

OHIO

Agricultural Experiment Station, Wooster (Corn Investigations, G. H. Stringfield)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk, and Ear Rots, J. R. Holbert)

INDIANA

Purdue University Agricultural Experiment Station, LaFayette (Corn Rots and Metallic Poisoning, J. F. Trost, Acting in Charge)

Purdue University Agricultural Experiment Station, LaFayette (Leaf Rusts, R. M. Caldwell)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust, E. C. Stakman)(M. N. Levine)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, C. C. Allison)

GREAT PLAINS AREA (South to North)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)(Jan. 26)

Seeding of spring grains was delayed by the occurrence of unfavorable weather. The season is unusually early here and there has been very little winter, although some hard freezes may yet occur. Farmers are seeding their spring oats. The varietal experiment of oats in field plots has been sown.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Fort Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon)

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (Jan. 15)

The weather continues to be bright and dry. A new low for the winter of 2 degrees F., was established yesterday.

Since artificial freezing of winter wheats is being stressed here, a brief report of results may be of interest. In the accompanying table, the average percentage of surviving plants from four seeding dates, frozen together as a unit at four periods during the early winter, is given. Seeding dates were from September 22 to October 21, and freezing dates from November 12 to December 21. The plants were grown in flats in the field and consequently possessed the same degree of hardening as field plants when frozen. The checks showed very little variability and are presented in their normal position to permit a direct comparison with the other varieties.

Relative cold resistance of leading wheat varieties in a date-of-seeding test, as determined by artificial refrigeration, at Lincoln, Nebr., November and December, 1930.

Variety	C. I. No.	Percentage of Surviving plants
Minturki (Check)	6155	58.5
Nebraska No. 60 (Check)	6250	56.5
Kharkof (Hays No. 2)	6686	52.0
Nebraska No. 50	8885	49.0
Kharkof	1442	48.0
Kanred	5146	45.0
Oro	8220	45.0
Tenmarq	6936	38.0
Kanred x Prelude	8836	37.0
Blackhull (Check)	6251	28.5
Early Blackhull	8856	23.0

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden)

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(Jan. 17)

The weather in December and the first half of January was unusually mild. If the present weather conditions continue the percentage of winterkilling of winter wheat will be very small, especially in this area of North Dakota. The snowfall in and near Mandan was heavier than in certain areas farther west. A light covering of snow still remains on stubble land, pastures, and open fields that are not too exposed to a clear sweep of the wind.

A Feed Crops Conference was held in Mandan on January 12. The purpose of the meeting was to discuss cropping and feeding practices of interest to farmers in Morton County, and to decide on the work to be done in this County on feed crops by the North Dakota Agricultural College Extension Service during the coming year. About 25 farmers of Morton County and 10 or 15 students from the Mandan High School were in attendance.

Temperatures in December were as follows: maximum 44 degrees on December 8; minimum -1 degree on December 1; average mean 22 degrees or 10 degrees above the 17-year average. In the first half of January subzero temperatures of -10, -11, and -6 degrees were recorded on January 12, 13, and 14, respectively. The maximum temperature recorded was 42 degrees on January 15. The average mean temperature was 18 degrees.

Precipitation in the form of snow amounted to 0.13 of an inch and 0.01 of an inch in December and the first half of January, respectively.

(Feb. 2)

Exceptionally warm weather prevailed in January and only small patches of snow remain. These are noticeable only on the northern slope of hills or in hollows where drifts formed.

All of the snow that had collected on the winter-wheat nursery has melted. Approximately 75 per cent of the wheat in the nursery is showing green growth, the distribution of which is fairly uniform, some occurring in every row.

Patches of green grass are appearing in lawns on the Station and in Mandan. Green spears of grass are plentiful in hay meadows and a few green alfalfa shoots are noticeable. Buds on trees are swelling and perennial flowers in protected sunny locations are making growth.

The maximum temperature for January was 57 degrees. The minimum temperature was -11 degrees and the average mean temperature was 34 degrees. The average maximum, minimum, and mean temperatures for January were 35 degrees, 12 degrees, and 24 degrees, respectively, as compared with the 17-year average (1914-1930) maximum, minimum, and mean temperatures for January of 19 degrees, -3 degrees, and 8 degrees, respectively.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (Jan. 16)

The first half of the winter has been unusually mild and free from snow at this Station. The temperature has been below zero only twice, 7 degrees below on December 21, and 13 degrees below on January 13. Last winter at this time the temperature was below zero for days at a time. There has been but 0.10 of an inch of precipitation this month, mostly recorded as rain on the morning of January 7. The maximum temperature this month was 41 degrees on January 7.

On January 9 a farmers' "Feeds and Feeding" meeting was held in Dickinson, conducted by Dr. E. G. Booth, extension agronomist, and Charles Eastgate, county agent for Stark County. Considerable interest was shown by about 100 farmers who asked many questions regarding alfalfa, sweet clover, crested wheat grass, corn, and the various grains used for feed. The fact was brought out that nearly all the farmers in this County are feeding some wheat to livestock this winter.

Because of the prevalent interest in the various grain crops and their relative value from a feeding standpoint, the accompanying table was assembled to show the total digestible nutrients per acre of leading cereal grains, including corn, based on average yields obtained in varietal plots at this Station for the 10-year period, 1921 to 1930, inclusive.

Total digestible nutrients per acre of leading cereal grains, including corn, based on average yields obtained in varietal plots at the Dickinson Substation for the 10-year period, 1921 to 1930, inclusive.

Grain and Variety	10-yr. average production of grain				10-yr. average straw (or stover)			Total (grain and straw)
	Bu. per acre	Lbs. per acre	Digestible nutrients Per 100 lbs.[a]	Digestible nutrients Per acre	Lbs. per acre	Digestible nutrients Per 100 lbs.[a]	Digestible nutrients Per acre	
				(Lbs.)			(Lbs.)	(Lbs.)
Wheat								
Mindum (durum)	18.1	1086	78.8	856	1780	36.9	657	1513
Marquis (common)	16.9	1014	79.7	808	1782	36.9	658	1466
Ceres[b] do.	19.9[b]	1194[b]	79.7	952	1968	36.9	726	1678
Emmer								
Yaroslav	38.0	1216	76.5	930	1696	36.9	626	1556
Winter rye								
Dakold	15.4	862	81.0	698	1625	41.2	670	1368
Oats								
Victory	44.0	1408	70.4	991	1850	45.6	844	1835
Gopher[c]	46.8	1498	70.4	1055	1603	45.6	731	1786
Barley								
Steigum (2-rowed)	28.4	1363	79.4	1082	1987	42.5	844	1926
Odessa (6-rowed)	26.9	1291	79.4	1025	1630	42.5	693	1718
Corn								
Gehu (flint) shelled	25.3	1417	84.2	1193	2077[d]	45.2	939	2132
Northwestern (semident)	22.1	1238	84.2	1042	2235[d]	45.2	1033	2075
Proso								
Red Russian	11.7	655	77.5	508				

a/ Taken from tables in "Feeds and Feeding" by Henry and Morrison

b/ Yields of Ceres wheat computed from those of Marquis wheat for 1921 and 1922.

c/ Using yields of Kherson oats for 1921 and 1922.

d/ Stover weights plus cobs, estimated at 80 lbs. dry matter per 100 lbs. air dried stover.

(Feb. 2)

January, 1930, apparently was the warmest January at this Station since 1919. The mean temperature was 24.6 degrees, which is about 14 degrees above normal or about the normal mean temperature for March. At the beginning of January there were about 2 inches of snow, which had entirely disappeared by the 22nd. The snowfall totaled 0.80 of an inch. This, together with two showers, made 0.22 of an inch of precipitation. The wind velocity averaged 5.5 miles per hour.

There was a decided contrast to January, 1930, which had a mean temperature of 5 degrees below zero and a snowfall of 18 inches. These months represent the extremes, as the average January at this Station has a mean temperature of about 10.3 degrees above zero, and a snowfall of about 4.5 inches.

Local golfers have been playing their favorite game for the past 10 days. Other signs of spring are small boys playing marbles and the arrival of woodpeckers and robins which are seldom seen here in winter.

Winter grain appears to be in excellent condition at present, although there is no snow protection. The crosses of H-44 (spring wheat) with Minhardi winter wheat are quite green at present. If very cold weather without snow should follow, winterkilling might be severe, especially if followed by a dry spring.

The soil thermograph set up in the stubble in the winter-wheat nursery, registering the soil temperature at a depth of 2 inches, fell below a temperature of 5 degrees above zero only twice this winter, January 13 and 14, when the air temperature fell below zero. The thermograph record was a straight line on 29 and 30 degrees almost throughout the past week, which was the warmest this winter. The chief exception was the period from noon to 6 p.m. of the past four days when the temperature rose to as high as 37 degrees, dropping back each night to about 30 degrees.

Agricultural Experiment Station, State College Station, Fargo (Flax Diseases, L. W. Boyle)

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, L. L. Davis)

Agricultural Experiment Station, Moscow (Wheat Improvement, V. H. Florell)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

Agricultural Experiment Station, Pullman (Stinking Smuts of Wheat, H. H. Flor)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague)

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward)

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, ______________)

University Farm, Davis (Cereal Agronomy, G. A. Wiebe)

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel)

CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 February 28, 1931 No. 4
Personnel (Feb. 16-28) and General Issue

PERSONNEL ITEMS

Mr. Charles R. Adair has been appointed agent, effective March 2, to conduct cooperative experiments at Stuttgart, Ark., in connection with the expanded research program in the Mississippi Valley on production methods, culture, and use of rice as food.

Mr. I. M. Atkins, junior agronomist assigned to the cooperative wheat-improvement experiments at Substation No. 6, Denton, Tex., arrived in Washington on February 17 to confer with Department personnel and prepare his annual report. Mr. Atkins will remain in Washington about 30 days.

Mr. A. T. Bartel, junior agronomist in the cooperative cereal-improvement experiments at Tucson, Ariz., arrived in Washington on February 20 to confer with Office personnel, compile data, and prepare his annual report.

Mr. Henry M. Beachell has been appointed agent, effective March 2, to conduct cooperative experiments at Beaumont, Tex., in connection with the expanded research program in the southern States on production methods, culture, and use of rice as food.

Mr. L. L. Davis, formerly in charge of the cooperative cereal experiments at the Aberdeen (Idaho) Substation is being transferred to Biggs, Calif., where he will have charge of the cooperative rice investigations and act as superintendent at the Biggs Rice Field Station.

Dr. J. G. Dickson, agent in the cooperative cereal-disease investigations conducted at Madison, Wis., was in Washington for six days to confer with Bureau officials. On Wednesday, February 25, Dr. Dickson spent the day in New York City in conference with Federal Grain Supervision officials and grain inspection officials of the New York Produce Exchange, and members of the Trade, including the principal exporters. He left for Madison on February 27.

Messrs. O. S. Fisher and K. S. Quisenberry left Washington on February 22 for Fort Worth, Tex.. Mr. Fisher will have charge of seed loan work for the Farmers' Seed Loan Office at that point, and Dr. Quisenberry is to assist in passing on loan applications. It is expected that they will be engaged on this work for two months.

Dr. J. H. Martin, senior agronomist in charge of grain sorghum and broomcorn investigations, spent the week beginning February 13 in Manhattan, Kans., where he conferred with officials of the Department and of the Kansas Experiment Station regarding sorghum experiments in 1931.

Mr. J. B. Sieglinger, agronomist in charge of the cooperative grain sorghum and broomcorn investigations at the Southern Great Plains Field Station, Woodward, Okla., arrived in Washington on February 6 to confer with Department personnel. He left on February 17, returning to his headquarters by way of Chicago, Ill., and Manhattan, Kans., where he conferred with the personnel of the University of Chicago and of the Kansas Agricultural Experiment Station, respectively.

Mr. D. E. Stephens, superintendent of the Sherman County Branch Station, Moro, Oreg., who has been in Washington since January 10 compiling data on the cooperative field experiments, returned to his headquarters on February 16.

Mr. Edmund Stephens, junior agronomist assigned to the cooperative wheat improvement investigations at the Southern Great Plains Field Station, Woodward, Okla., who has been in Washington since November 23 conferring with members of the Office staff and preparing his annual report, left for Oklahoma on February 17.

Mr. Harland Stevens, who has been under appointment as agent in the cooperative cereal experiments at Manhattan, Kans., has been transferred to Aberdeen, Idaho, where he will be in charge of the cereal experiments conducted in cooperation with the Idaho Agricultural Experiment Station. Mr. Stevens will succeed Mr. L. L. Davis, hertofore in charge of the work at Aberdeen, who is being transferred to Biggs, Calif.

Mr. C. A. Suneson, junior agronomist assigned to the cooperative cereal investigations with wheat and other small grains at the Nebraska Agricultural Experiment Station, Lincoln, Nebr., arrived in Washington on February 22 to confer with Department personnel, compile data, and prepare his annual report. Mr. Suneson will be in Washington about 30 days.

Mr. Orville A. Vogel was appointed agent, effective February 16, to assist in the wheat-improvement investigations conducted in cooperation with the Washington Agricultural Experiment Station at Pullman, Wash.

VISITORS

Dr. J. Henderson Smith, who is in charge of the work on the virus diseases of plants at the Rothamsted Experiment Station in England, was a visitor in the Department during the week of February 19. Dr. Henderson Smith will visit several of the institutions in the eastern and Pacific coast States and will spend some time in the South.

MANUSCRIPTS AND PUBLICATIONS

7 A manuscript entitled "The Effect of Preventing Fruiting and of Reducing the Leaf Area on the Accumulation of Sugars in the Corn Stem," by J. D. Sayre and V. H. Morris, was approved on February 16 for submittal to the Journal of the American Society of Agronomy.

8 A manuscript entitled "Comparison of Methods of Determining Moisture in Corn Tissue," by J. D. Sayre and V. H. Morris, was approved on February 17 for publication in Plant Physiology.

9 A manuscript entitled "A Study of the Physiologic Forms of Kernel Smut of Sorghum," by L. E. Melchers, C. H. Ficke, and C. O. Johnston, was submitted on February 25 for publication in the Journal of Agricultural Research.

10 A manuscript entitled "Experiments on Hybrid Vigor and Convergent Improvement in Corn," by F. D. Richey and G. F. Sprague, was submitted on February 27 for publication in the Technical Bulletin series.

Galley proof of the article entitled "The Water Requirement of Certain Crop Plants and Weeds in the Northern Great Plains," by Arthur C. Dillman, for publication in the Journal of Agricultural Research, was read on February 24.

Page proof of Farmers' Bulletin No. 1659 entitled "Oats in the Northeastern States," by T. R. Stanton and F. A. Coffman, was read on February 17.

The article entitled "A Statistical Study of Wheat and Oat Strains Grown in Rod-row Trials," by F. R. Immer and E. R. Ausemus, appears in the Journal of the American Society of Agronomy 23(2): 118-131. February, 1931. (Cooperative investigations between the Office of Cereal Crops and Diseases and the Minnesota Agricultural Experiment Station.)

The article entitled "Effect of Depth of Seeding on the Occurrence of Covered and Loose Smuts in Winter Barley," by J. W. Taylor and Marion Griffiths Zehner, appears in the Journal of the American Society of Agronomy 23(2): 132-141, figs. 1-3. February, 1931.

Omission

In the Annual Report of Publications and Manuscripts (Cereal Courier v. 23, No. 2, Jan. 31, 1931) the following reference was omitted:

Stanton, T. R. and F. A. Coffman. Fall-Sown Oat Production. U. S. Dept. Agr. Farmers' Bul. 1640, 20 p., 9 figs. November, 1930.

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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 March 15, 1931 No. 5
Personnel (March 1-15) and Field Station (Feb. 16-28) Issue

PERSONNEL ITEMS

Mr. I. M. Atkins, junior agronomist assigned to the cooperative wheat-improvement experiments at Substation No. 6, Denton, Tex., left Washington on March 11 after a stay of about 3 weeks during which he conferred with Department personnel and prepared his annual report.

Mr. A. T. Bartel, junior agronomist in the cooperative cereal-improvement experiments at Tucson, Ariz., who has been in Washington since February 20 conferring with Office personnel and engaged in the compilation of data and the preparation of his annual report, returned to his headquarters on March 14.

Mr. W. M. Bever, junior pathologist in the cooperative stripe rust investigations at Moscow, Idaho, who spent about a month in Washington in the interests of the work, left on March 1. En route to his headquarters he will visit Madison, Wis., and St. Paul, Minn., to confer with agricultural experiment station officials. He will also visit the Dominion Rust Research Laboratory at Winnipeg, Canada, to confer with rust investigators, examine their equipment and apparatus, and study their technic.

Mr. L. W. Boyle, assistant pathologist in the cooperative investigations of flax diseases at Fargo, N. Dak., who is temporarily stationed at Madison, Wis., was in Washington from March 4 to 7 in conference with the Office staff.

Mr. A. C. Dillman, associate agronomist in charge of flax investigations, attended a conference of the Flax Development Committee at Minneapolis on March 9. He also conferred with officials at University Farm, St. Paul. On his return he stopped at Madison, Wis., to confer with officials at the University.

About 50 representatives of the flaxseed industry were present at the conference, at which brief reports were given by agronomists and pathologists of the four principal flax-producing States. Mr. L. P. Nemzek, Chairman of the Flax Development Committee, pointed out that in 1930 linseed-oil consumption had been reduced about 30 per cent below that of 1929. The total crushing of linseed amounted to approximately 31,000,000 bushels as compared to 42,000,000 bushels in 1929. The acreage seeded in 1930 was approximately 4,400,000 acres, but there was a heavy abandonment owing to the extreme drought in the western part of the flax area so that only about 3,946,000 acres were harvested. It was the judgment of the conference that the acreage of flax in 1931 should not exceed the acreage harvested in 1930, if the present relatively favorable price relation is to be maintained.

By unanimous vote of the conference the "Flax Institute of the United States" was organized to take over the work of the former Flax Development Committee. Dr. H. L. Walster, Agricultural College Fargo, N. Dak., was elected president and James S. Milloy of Fargo was chosen secretary. A committee of scientific advisors was elected, including Dr. Andrew Boss, University Farm, St. Paul; Prof. H. L. Bolley, Fargo; Prof. C. Larson, Dean of Agriculture, Brookings, S. Dak., Prof. M. L. Wilson, Bozeman, Mont., and Mr. Dillman, representing the Department of Agriculture. State committees were appointed for each of the four principal flax-producing States.

Dr. Hurley Fellows, associate pathologist in charge of the cooperative investigations with wheat foot rots at Manhattan, Kans., arrived in Washington on March 1 and spent four days conferring with the Office staff.

Mr. C. C. Fifield, associate baking technologist, left Washington on March 11 for Manhattan, Kans., where he will confer with cereal chemists regarding the relative milling and baking properties of hard winter wheats. Mr. Fifield will return in about one week.

Dr. J. R. Holbert, senior agronomist in charge of the cereal-disease investigations conducted in cooperation with Funk Bros. Seed Co., of Bloomington, Ill., and the Illinois Agricultural Experiment Station, arrived in Washington on March 12 to confer with Department officials regarding corn-disease investigations. Before returning to his headquarters about March 26 Dr. Holbert will stop in Chicago to confer with grain dealers there.

Mr. J. W. Jones, senior agronomist in charge of rice production and improvement, is on a three-month trip to points in Missouri, Arkansas, Louisianna, Texas, and California in the interests of rice research. At Biggs, Calif., Mr. Jones will clean up certain details incident to the new superintendent, Mr. L. L. Davis, taking over the work.

Mr. G. S. Smith, junior agronomist assigned to the cooperative cereal experiments at Langdon Substation, Langdon, N. Dak., who has been in Washington for the past few months conferring with project leaders and preparing his annual report, returned to his headquarters on March 11.

Mr. H. S. Smith, junior administrative assistant, left Washington on March 5 for Memphis, Tenn., to assist in conducting field work connected with seed, feed, fertilizer, and fuel and oil loans for the Farmers' Seed Loan Office. Mr. Smith will be away approximately 2 months.

Mr. C. A. Suneson, junior agronomist assigned to the cooperative cereal investigations with wheat and other small grains at the Nebraska Agricultural Experiment Station, Lincoln, Nebr., who has been in Washington since February 22, left for his headquarters on March 7.

MANUSCRIPTS AND PUBLICATIONS

11 A manuscript entitled "A Gene Influencing the Composition of the Culm in Maize," by Merle T. Jenkins and Fisk Gerhardt, was approved on March 3 for publication in the Research Bulletin series of the Iowa Agricultural Experiment Station.

12 A manuscript entitled "Height Inheritance in Broomcorn," by John B. Sieglinger, was submitted on March 6 for publication in the Journal of Agricultural Research.

14 A manuscript entitled "Inheritance of Resistance in Oats to Ustilago levis," by F. A. Coffman, T. R. Stanton, B. B. Bayles, G. A. Wiebe, R. W. Smith, and V. F. Tapke, was submitted on March 13 for publication in the Journal of Agricultural Research.

15 A manuscript entitled "The Growth Curve in Barley," by Merritt N. Pope, was submitted on March 13 for publication in the Journal of Agricultural Research.

16 A manuscript entitled "Dehiscence of the Boll of Linum rigidum and Related Species," by A. C. Dillman and J. C. Brinsmade, Jr., was submitted on March 13 for publication in the Journal of Agricultural Research.

Galley proof of article entitled "A Cytologic Study of Wheat X Rye Hybrids and Back Crosses," by V. H. Florell, for publication in the Journal of Agricultural Research, was read on March 3.

Galley proof of article entitled "A Genetic Study of Wheat X Rye Hybrids and Back Crosses," by V. H. Florell, for publication in the Journal of Agricultural Research, was read on March 3.

Galley proof of the ten articles prepared by members of this Office for the Yearbook of Agriculture for 1931 was read on March 12.

The article entitled "Freezing-point Depression and Specific Conductivity of Sorghum Tissue Fluids," by John H. Martin, J. Arthur Harris, and Ivan D. Jones, appears in the Journal of Agricultural Research 42 (2): 57-69. January 15, 1931.

The article entitled "What Does Hybrid Corn Mean?" by A. M. Brunson, appears in The Kansas Farmer 69 (6): 24. February 7, 1931. (Cooperative investigations between the Office of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station).

The article entitled "Another Host for Ustilago striaeformis (Westd.) Niessl.," (Note.), by C. O. Johnston, appears in Phytopathology 21 (2): 241. February 1931. (Cooperative investigations between the Office of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station).

The article entitled "The Distribution of Cereal Footrots in the Pacific Northwest," by Roderick Sprague, appears in Northwest Science 5:10-12. March 1931. (Cooperative investigations between the Office of Cereal Crops and Diseases and the Oregon and Washington agricultural experiment stations).

ADMINISTRATIVE NOTES

Mail Vouchers to Washington Promptly

Vouchers always should be submitted promptly, but attention to this matter at the end of March and for the remainder of the current fiscal year will be particularly helpful.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, V. F. Tapke, Acting in Charge)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love.)

HUMID MISSISSIPPI VALLEY AREA (South to North

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

ARKANSAS

Agricultural Experiment Station, Fayetteville (Rice Diseases, E. C. Tullis)

MISSOURI

Agricultural Experiment Station, Columbia (Rice Agronomy, B. M. King)

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

OHIO

Agricultural Experiment Station, Wooster (Corn Investigations, G. H. Stringfield)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett) (January 1931)

Data on the effect of date of seeding on time of ripening, bushel weight, and acre yield of varieties and selections of oats grown at Ames, Iowa, in 1930, are presented in the following table.

Effect of date of seeding on date of ripening, bushel weight, and acre yield of varieties and selections of oats grown at Ames, Iowa, 1930

Item and variety	C.I.No.	Date sown				Date sown				Date sown			
		Mar.31	Apr.12	Apr.30	Diff. (Days)	Mar.31	Apr.12	Apr.30	Diff. (Loss lbs.)	Mar.31	Apr.12	Apr.30	Diff.
Date of ripening:		July	July										
Minota	1285	18	22	-	4	-	-	-	-	-	-	-	-
Iowar	847	14	18	-	4	-	-	-	-	-	-	-	-
Kanota	839	15	20	-	5	-	-	-	-	-	-	-	-
Swedish Select	134	18	21	-	3	-	-	-	-	-	-	-	-
Silvermine	659	17	20	-	3	-	-	-	-	-	-	-	-
Gopher	2024	14	17	-	3	-	-	-	-	-	-	-	-
Iogren	2027	16	21	-	5	-	-	-	-	-	-	-	-
Rustless (Iowa No. 444)	2331	15	19	-	4	-	-	-	-	-	-	-	-
Richland (Iowa No. 105)	737	12	19	-	7	-	-	-	-	-	-	-	-
Iogold	2329	13	18	-	5	-	-	-	-	-	-	-	-
Green Russian	-	17	21	-	4	-	-	-	-	-	-	-	-
Liberty Hull-less	845	13	19	-	6	-	-	-	-	-	-	-	-
Mean average		15.2	19.6	-	4.4	-	-	-	-	-	-	-	-
D-67(cross)	-	14	19	-	5	-	-	-	-	-	-	-	-
D-112(cross)	-	17	20	-	3	-	-	-	-	-	-	-	-
Iowa No. 1255 (Burt)	-	13	13	18	-	-	-	-	-	-	-	-	-
Iowa No. 1262 (Kherson)	-	16	16	18	-	-	-	-	-	-	-	-	-
Iowa No. 1343 (Daubeney)	-	12	14	18	-	-	-	-	-	-	-	-	-
Iowa No. 1547 (Green Russian)	-	14	15	19	-	-	-	-	-	-	-	-	-
Brunker	2054	12	15	17	-	-	-	-	-	-	-	-	-
D-3 (cross)	-	16	16	21	-	-	-	-	-	-	-	-	-
D-4 (cross)	-	15	16	21	-	-	-	-	-	-	-	-	-
D-5 (cross)	-	16	16	21	-	-	-	-	-	-	-	-	-
Iowa No. 957 (Swedish Select)	-	18	20	24	-	-	-	-	-	-	-	-	-
Hays No. 71 (Fulgnum)	-	12	12	18	-	-	-	-	-	-	-	-	-

Effect of date of seeding on date of ripening, bushel weight, and acre yield of varieties and selections of oats grown at Ames, Iowa, 1930 (continued)

Item and variety	C.I.No.	Date sown				Date sown				Date sown			
		Mar. 31	Apr. 12	Apr. 30	Diff. (Days)	Mar. 31	Apr. 12	Apr. 30	Diff. Loss (lbs.)	Mar. 31	Apr. 12	Apri 30	Diff.
Bushel weight (pounds):													
Minota	1285	-	-	-	-	34.5	32.5	-	2	-	-	-	-
Iowar	847	-	-	-	-	34.5	34.0	-	0.5	-	-	-	-
Kanota	839	-	-	-	-	33.0	33.0	-	0	-	-	-	-
Swedish Select	134	-	-	-	-	36.0	34.0	-	2	-	-	-	-
Silvermine	659	-	-	-	-	36.0	33.0	-	3	-	-	-	-
Gopher	2024	-	-	-	-	37.0	36.0	-	1	-	-	-	-
Iogren	2027	-	-	-	-	35.5	33.0	-	2.5	-	-	-	-
Rustless (Iowa No. 444)	2331	-	-	-	-	35.0	34.0	-	1.0	-	-	-	-
Richland (Iowa No. 105)	787	-	-	-	-	37.0	36.5	-	0.5	-	-	-	-
Iogold	2329	-	-	-	-	36.5	36.0	-	0.5	-	-	-	-
Green Russian	-	-	-	-	-	37.0	35.0	-	2.0	-	-	-	-
Liberty Hull-less	345	-	-	-	-	44.5	44.5	-	0.0	-	-	-	-
Mean average	-	-	-	-	-	36.8	35.5	-	1.3	-	-	-	-
D-67 (cross)	-	-	-	-	-	36.5	36.0	-	0.5	-	-	-	-
D-112 (cross)	-	-	-	-	-	38.0	37.5	-	0.5	-	-	-	-
Iowa No. 1255 (Burt)	-	-	-	-	-	33.4	31.4	28.7	-	-	-	-	-
Iowa No. 1262 (Kherson)	-	-	-	-	-	30.9	30.7	28.2	-	-	-	-	-
Iowa No. 1343 (Daubeney)	-	-	-	-	-	33.6	30.8	28.8	-	-	-	-	-
Iowa No. 1547 (Green Russian)	-	-	-	-	-	34.6	32.9	26.2	-	-	-	-	-
Brunker	2054	-	-	-	-	35.3	34.9	31.4	-	-	-	-	-
D-3 (cross)	-	-	-	-	-	31.7	30.0	26.1	-	-	-	-	-
D-4 (cross)	-	-	-	-	-	30.0	29.2	29.1	-	-	-	-	-
D-5 (cross)	-	-	-	-	-	29.2	31.0	28.6	-	-	-	-	-
Iowa No. 957 (Swedish Select)	-	-	-	-	-	29.7	29.9	24.6	-	-	-	-	-
Hays No. 71 (Fulghum)	-	-	-	-	-	34.1	31.4	31.3	-	-	-	-	-

Effect of date of seeding on date of ripening, bushel weight, and acre yield of varieties and selections of oats grown at Ames, Iowa, 1930 (continued)

Item and variety	C.I.No.	Date sown				Date sown				Date sown				
		Mar.31	Apr.12	Apr.30	Diff.	Mar.31	Apr.12	Apr.30	Diff. Loss	Mar.31	Apr.12	Apr.30	Diff. Loss	
													Bu.	P.ct.
					(Days)				(Lbs.)					
Acre yield (bushels):														
Minota	1285	-	-	-	-	-	-	-	-	65.6	62.5	-	3.1	4.7
Iowar	847	-	-	-	-	-	-	-	-	69.4	64.1	-	5.3	7.6
Kanota	839	-	-	-	-	-	-	-	-	65.0	59.1	-	5.9	9.1
Swedish Select	134	-	-	-	-	-	-	-	-	62.2	56.5	-	5.7	9.2
Silvermine	659	-	-	-	-	-	-	-	-	63.1	56.9	-	6.2	9.8
Gopher	2024	-	-	-	-	-	-	-	-	70.0	62.5	-	7.5	10.7
Iogren	2027	-	-	-	-	-	-	-	-	74.1	61.9	-	12.2	16.3
Rustless (Iowa No. 444)	2331	-	-	-	-	-	-	-	-	74.1	61.6	-	12.5	16.9
Richland (Iowa No. 105)	787	-	-	-	-	-	-	-	-	63.7	52.2	-	10.9	17.1
Iogold	2329	-	-	-	-	-	-	-	-	64.1	52.8	-	11.3	17.6
Green Russian	-	-	-	-	-	-	-	-	-	57.8	47.5	-	10.3	17.8
Liberty Hull-less	845	-	-	-	-	-	-	-	-	50.0	34.4	-	15.6	31.2
Mean average	-	-	-	-	-	-	-	-	-	64.9	56.0	-	8.9	13.6
D-67 (cross)	-	-	-	-	-	-	-	-	-	62.5	67.5	-	-	-
D-112 (cross)	-	-	-	-	-	-	-	-	-	44.1	45.0	-	-	-
Iowa No. 1255 (Burt)	-	-	-	-	-	-	-	-	-	74.5	83.6	54.1	-	-
Iowa No. 1262 (Knerson)	-	-	-	-	-	-	-	-	-	70.0	76.2	43.7	-	-
Iowa No. 1343 (Daubeney)	-	-	-	-	-	-	-	-	-	71.4	73.4	53.9	-	-
Iowa No.1547(Green Russian)	-	-	-	-	-	-	-	-	-	77.4	82.7	52.6	-	-
Brunker	2054	-	-	-	-	-	-	-	-	76.7	70.2	72.0	-	-
D-3 (cross)	-	-	-	-	-	-	-	-	-	83.5	34.4	48.0	-	-
D-4 (cross)	-	-	-	-	-	-	-	-	-	73.4	83.0	50.1	-	-
D-5 (cross)	-	-	-	-	-	-	-	-	-	70.4	73.3	56.9	-	-
Iowa No.957(Swedish Select)	-	-	-	-	-	-	-	-	-	73.3	86.3	44.6	-	-
Hays No. 71 (Fulghum)	-	-	-	-	-	-	-	-	-	76.0	50.8	80.6	-	-

Data on 12 varieties of oats grown in cooperative experiments at Ames for the 8-year period from 1923 to 1930, inclusive, are reported in the following table.

Table 2. - Annual and average acre yields of 12 varieties of oats tested at Ames, Iowa, during the 8-year period, 1923 to 1930.

VARIETY	C.I.No.	ACRE YIELD (POUNDS) 1923	1924	1925	1926	1927	1928	1929	1930	Aver	-30 per cent[a]	ACRE YIELD[b] (Bu.)
Rustless[c] (Iowa No.444)	2331	2270	3000	1390	2400	1850	2500	2150	2170	2279	1595	71
Iowar	847	2810	2570	1800	2420	1830	2440	2140	2135	2268	1588	70
Minota	1285	2690	2730	2160	2250	1620	2470	2110	2050	2260	1582	70
Iogold	2329	2570	2690	1780	2260	2200	2540	2120	1870	2254	1578	70
Iogren	2024	2710	3030	1800	2270	1620	2170	2150	2175	2240	1568	70
Richland (Iowa No.105)	787	2500	2630	1700	2360	2060	2530	2110	1865	2226	1558	69
Silvermine	659	2420	2520	2250	2280	1910	2490	1990	1920	2222	1555	69
Kanota	839	2700	2400	1910	2190	1540	2720	2200	1985	2206	1544	68
Green Russian	---	2390	2410	2270	2420	1650	2450	2080	1685	2169	1518	67
Swedish Select	134	2360	2290	1960	2390	1740	2610	2020	1900	2159	1511	67
Gopher	2027	2260	1960	1665	2620	1600	2620	2320	2120	2146	1502	67
Liberty Hull-less	845	1480	1420	1200	1330	1100	2000	1520	945	----	1374	--

a/ The average yields of the common varieties have been reduced by 30 per cent to correct for the weight of hull so that they may be compared with the hulless variety without further calculation.

b/ Calculated from the average acre yield in pounds before deductions for hull were calculated.

c/ While comparatively resistant to stem rust is not true for this character. There are many new strains from this variety in the cereal nursery at the present time. Some of them will doubtless prove to be high yielding, stiff strawed, and completely resistant to stem rust.

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

INDIANA

Purdue University Agricultural Experiment Station, LaFayette Corn Rots and Metallic Poisoning, J. F. Trost, Acting in Charge)

Purdue University Agricultural Experiment Station, LaFayette (Leaf Rusts, R. M. Caldwell)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust E. C. Stakman)(M. N. Levine)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, C. C. Allison)

GREAT PLAINS AREA (South to North)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins) (Feb.14)

Seeding of the spring-grain nursery has just been completed. The following sowings were made: 120 varieties and selections of oats sown in replicated 3-row, 15-ft. plots; a crown-rust nursery in cooperation with Dr. H. C. Murphy; and a stem-rust nursery in cooperation with Dr. E. C. Stakman. In addition a small flax nursery consisting of 6 varieties was sown to study the adaptability of flax to this region.

The spring-oat varieties in field plots were sown about the middle of January and have emerged to a good stand.

Spring growth has started in all fall sowings of small grains. The winter has been unusually mild, 19° F. being the lowest recorded temperature. Abundant moisture has been available throughout the winter and small grains have furnished much pasture. The weather during January was unusually mild and spring seeding was completed at an early date.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)(March 2)

The winter at Woodward has been mild and open. The lowest temperature recorded is 12° F. on January 14. The minimum temperature for February was 25° F. on the 19, and the maximum temperature was 70° F. on the 20th. Moisture conditions are favorable at present, although more moisture will be needed before harvest. The total precipitation for February was 0.80 of an inch; 0.37 of an inch fell on February 28.

Winter wheats in the plots and nursery are showing vigorous growth. Some of the earlier varieties, such as Early Blackhull and Nebraska 28, are 6 inches high. No winterkilling is apparent, even on spring-type barleys seeded last fall in the nursery.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Fort Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson) (March 14)

The precipitation since January 1st has been less than one inch. We have experienced one of the mildest winters on record. A temperature as low as zero occurred but once during the winter. The mildness of the winter is evident from the fact that Fulghum oats survived 50 per cent. This is the first time in the writer's experience that oats have survived the winter. Winter wheat emerged from the dormancy period fully three weeks earlier than usual. Wheat is now making vigorous growth. Wheat is in good condition throughout the entire State, and there is plenty of moisture for the present. The last of the spring sowing of small grains was completed on the 14th.

Today marks another milestone of progress at this Station, as we are moving from the old office into the new building. The new office building is a two-story, fireproof, brick structure, 50 by 45 feet in dimension, with full basement. The building is modern throughout. Individual offices for the members of the staff and laboratory space have been provided. All of the Federal men will have offices on the second floor.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon)

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden)

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, (March 2)

First blooms were noted on flax hybrids in the greenhouse on January 29. The plants have set a good crop of bolls and most of the plants are still blooming. The earliest bolls are beginning to ripen.

The mild temperature that prevailed during December and January continued throughout February. The average daily mean temperature in February was 29°, which is 16° higher than the average for the past 17 years, since records have been taken at Mandan, and 6° higher than the highest February mean temperature for the 17 years. The winter was remarkable for the generally mild temperature that prevailed during the entire winter. The lowest temperature since February 1930 was -11°, recorded on January 13, 1931. The average lowest temperature at Mandan during the previous 17 years was -33°, and the highest minimum temperature for any winter during the 17-year period was -18°, recorded on January 27, 1926.

There were several light snowfalls during February, but the ground is now bare except in scattered patches where the snow drifted.

The maximum temperature in February was 58° on February 2 and February 15. The minimum was -2° on February 8. The total precipitation in February was 0.44 of an inch.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (Feb. 7)

Mild weather has continued to date, although the temperature has been slightly lower than in January. The maximum temperature this month was 54 degrees on the 1st and the minimum 5 below zero on the 9th. The maximum soil temperature at a depth of 2 inches was 37 degrees on the 1st, and the minimum 12 degrees on the 9th and 13th. The ground has been bare of snow most of the month. Less than three inches of snow fell, most of which melted soon after falling.

Winter wheat and rye still seem to be in good condition.

Reports indicate that some field work has been done in this part of the State, including disking, harrowing, and the seeding of rye and a little spring wheat. Most of this was done around the first of the month when the surface soil thawed out to a depth of several inches daily and barely froze at night.

The annual cereal report for this station is now nearly finished.

(March 2)

There have been several light snowfalls in February, the heaviest being 2.5 inches on the 26th. This was the greatest amount of snow at one time since a similar snowstorm the first week of last December. The warm weather caused the snow to melt soon after falling, giving the impression that there has been less snow than usual. The precipitation was somewhat below normal in December and January, but for February it was 0.18 of an inch above normal, being 0.61 of an inch as compared with a normal of 0.43. A summary of the weather for the past three months, with reference to temperature and precipitation, is presented below. This shows that the departure from the normal temperature has increased each month during the winter. It is hoped that this rate of rise will not continue into the summer. The winter period just ended evidently is the warmest ever recorded at this Substation.

Year	Month	Mean Temperature (Degrees)	Departure from normal	Precipitation (inches)	Departure from normal
1930	December	21.6	+ 4.3	0.37	-0.5
1931	January	24.6	+14.3	.22	- .20
1931	February	28.6	+16.8	.61	+ .18

There are about 2 inches of snow on the ground now that is melting fast. The frequent snowfalls in February have helped to prevent winter grain and perennial forage crops from severe injury during short periods of drying winds.

The soil thermograph set at a depth of 2 inches in the winter-wheat nursery, which was drilled in grain stubble, showed less daily fluctuation than the air temperature. The soil temperature varied from 2 to 12 degrees during each 24-hour period, the variation being greatest when the ground was bare. The mean soil temperature was approximately the same as the mean air temperature, being warmer than the air at night and cooler in the daytime. The maximum soil temperature for the winter was 39 degrees on February 23, and the minimum dropped to approximately zero on January 13 and 14. The soil thawed out to a depth of two or more inches each afternoon from January 29 to February 1, and again from February 23 to 25, the ground being bare during both periods. It was during these warm periods that a few farmers in this district did some field work such as disking, harrowing, and seeding rye.

Supt. Leroy Moomaw is expected to return from Washington about March 5.

Agricultural Experiment Station, State College Station, Fargo (Flax Diseases, L. W. Boyle)

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, L. L. Davis)

Agricultural Experiment Station, Moscow (Wheat Improvement, V. H. Florell)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

Agricultural Experiment Station, Pullman, (Stinking Smuts of Wheat, H. H. Flor)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague)

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (March 3)

The cold weather in this section continued from November 18, 1930, to January 25, 1931. The minimum temperature in January was 10° F, recorded on January 1 and January 20; the maximum was 43°, recorded on January 25. The minimum in February was 5° and the maximum 54°, recorded on the 1st and 24th, respectively.

The total precipitation for January was 0.54 of an inch, and for February it was 0.73 of an inch.

The snow cover is melting rather fast, but the fields in the valleys are covered with 6 to 12 inches. The days are warm and the nights are quite cold.

The snowfall in the mountains is far below normal, averaging about 50 per cent normal from readings of 7,000, 8,000, and 9,000 feet. Springs that have seldom, if ever, been without water are drying up. A constant high pressure has prevailed over the State and no storms have occurred.

The data on temperature and rainfall were furnished through the courtesy of Prof. Pittman. The dates for the minimum and maximum temperatures are within a day or two of being exact because readings were not taken daily at the farm, and there is great variation between readings at the farm and at this station.

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, L. L. Davis)

University Farm, Davis (Cereal Agronomy, G. A. Wiebe)

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel.)

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BUREAU OF PLANT INDUSTRY

CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 March 31, 1931 No. 6
Personnel (March 16-31) and General Issue

PERSONNEL ITEMS

Mr. P. G. Hoppe, associate pathologist in the cooperative cereal-disease investigations conducted at Madison, Wis., was in Washington on March 17 to confer with Department officials.

Mr. F. D. Richey, principal agronomist in charge of corn investigations, left Washington on March 18 for points in Ohio, Illinois, Iowa, Nebraska, Kansas, and Missouri, to confer with members of the Office of Cereal Crops and Diseases and officials of cooperating agencies relative to the progress of cooperative corn investigations. Mr. Richey is expected back in early April.

Mr. Walter H. von Trebra, was appointed agent, effective March 16, to assist in the cereal experiment conducted by this Office in cooperation with the Kansas State Agricultural Experiment Station, at Manhattan, Kansas.

VISITORS

Mr. S. L. Macindoo, of the N. S. Wales Department of Agriculture, Australia was an Office visitor the week of March 16.

MANUSCRIPTS AND PUBLICATIONS

17 A manuscript entitled "Inheritance of Resistance to Bunt, Tilletia tritici, in Crosses of White Federation with Turkey Wheats," by Fred N. Briggs, was submitted on March 17 for publication in the Journal of Agricultural Research.

18 A manuscript entitled "Physiologic Specialization in Puccinia eatoniae Arth.," by E. B. Mains, was approved on March 17 for submittal to Mycologia.

19 A manuscript entitled "Pop Corn," by Arthur M. Brunson and Carl W. Bower, was submitted on March 18 for publication in the Farmers' Bulletin series.

20 A manuscript entitled "Heterothallism in Puccinia triticina," by Ruth F. Allen, was approved on March 23 for submittal to Science.

21 A manuscript entitled "Catalase Activity in Relation to the Growth Curve in Barley," by Merritt N. Pope, was submitted on March 26 for publication in the Journal of Agricultural Research.

22 A manuscript entitled "Heterothallism and Hybridization in Tilletia tritici and T. levis," by H. H. Flor, was submitted on March 26 for publication in the Journal of Agricultural Research.

Galley proof of the article entitled "Growth Habit and Yield in Wheat as Influenced by Time of Seeding," by B. B. Bayles, and J. F. Martin, for publication in the Journal of Agricultural Research, was read on March 17.

Technical Bulletin No. 218 entitled "Inheritance of Winter Hardiness, Growth Habit, and Stem-Rust Reaction in Crosses between Minhardi Winter and H-44 Spring Wheats," by Karl S. Quisenberry, was received from the Government Printing Office on March 18, bearing date of January, 1931.

An abstract entitled "The Relation of Weather to the Development of Stem Rust, *Puccinia graminis*," by H. B. Humphrey, appears in the Proceedings of the Washington Academy of Sciences 21 (6): 129-130, March 19, 1931.

The 39-page Report No. 11 entitled "Iowa Corn Yield Test. Results for 1930," by Joe L. Robinson and A. A. Bryan, published by the Iowa Corn and Small Grain Growers' Association, was received March 23. (The Iowa Corn Yield Test is conducted by the Iowa Corn and Small Grain Growers' Association in cooperation with the Farm Crops Section, Iowa Agricultural Experiment Station, and the Office of Cereal Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture.)

Farmers' Bulletin No. 1659 entitled "Oats in the Northeastern States," by T. R. Stanton and F. A. Coffman, was received from the Government Printing Office on March 28, bearing date of March, 1931.

CEREAL COURIER

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(NOT FOR PUBLICATION)

Vol. 23 April 15, 1931 No. 7
Personnel (April 1-15) and Field Station (March 16-31) Issue

NOTICE

Beginning with the issue of May 10, 1931, the Cereal Courier will appear three times a month, namely, on the 10th, 20th, and last days of the month. The courtesy will be greatly appreciated if all contributors at agronomic and pathologic headquarters will mail field reports promptly on the 15th and last days of the month. The Courier issues of the 10th and 20th days of the month carry the field reports.

PERSONNEL ITEMS

Mr. C. E. Chambliss, associate agronomist in charge of rice technology, left Washington on April 10 for points in Alabama, Florida, Georgia, Louisiana, and South Carolina to confer with experiment station officials and others in regard to the testing of Patna and other varieties of rice. Mr. Chambliss will return in about 3 weeks.

Dr. H. H. Flor left Washington on April 4 for his headquarters at Pullman, Wash., stopping en route at Madison, Wis., St.Paul, Minn., and Fargo, N. Dak. At Pullman, Wash., he will make spring plantings of his cooperative wheat stinking-smut experiments. Later he will return to Fargo, N. Dak., where he will take up his new duties in charge of cooperative flax-disease investigations.

Mr. H. S. Garrison, assistant agronomist in corn investigations, has been transferred from the Arlington Experiment Farm to the cooperative corn-improvement work at the Georgia Coastal Plains Experiment Station, Tifton, Ga. He took up his new duties on April 1.

Dr. H. V. Harlan, principal agronomist in charge of barley investigations, left Washington on April 15 for points in Arizona, California, Idaho, Illinois, Oregon, and Utah for the purpose of taking notes on cooperative barley nurseries and consulting with experiment station officials.

Mr. C. H. Kyle, senior agronomist in corn investigations, is on a six-week trip to Tifton, Ga., and Florence, S. C. He will plant, thin, and take notes on corn and obtain data on cornstalks of the 1930 crop that have been held in storage for drying during the winter.

Mr. R. E. Wester, formerly assistant scientific aid in oat investigations, was transferred on April 1 to the Office of Cotton Production and Diseases. His new headquarters will be Greenville, Tex.

MANUSCRIPTS AND PUBLICATIONS

23 A manuscript entitled "The Experimental Modification of Heredity in Crop Plants: I. Induced Chromosomal Irregularities," by L. J. Stadler, was approved on April 7 for submittal to Scientific Agriculture.

24 A manuscript entitled "Physiologic Forms of *Ustilago levis* and *U. avenae* on Red Oats," by George M. Reed and T. R. Stanton, was submitted on April 8 for publication in the Journal of Agricultural Research.

25 A manuscript entitled "Factors Affecting the Development of the Aecial Stage of *Puccinia graminis* Pers.," by R. U. Cotter, was submitted on April 10 for publication in the Technical Bulletin series.

26 A manuscript entitled "Differentiation of Viruses Causing Green and Yellow Mosaics of Wheat," by H. H. McKinney, was approved on March 23 for submittal to Science.

27 A manuscript entitled "Stunting of Wheat Caused by *Tilletia levis* and *Tilletia tritici*," by H. A. Rodenhiser, was submitted on March 6 for publication in the Journal of Agricultural Research.

28 A manuscript entitled "A Second Pair of Factors Affecting Anthocyanin Pigment in Maize," by Merle T. Jenkins, was approved on April 10 for submittal to Genetics.

29 A manuscript entitled "The Inheritance of Colored Scutellums in Maize," by George F. Sprague, was submitted on April 13 for publication in the Technical Bulletin series.

The article entitled "The Water Requirement of Certain Crop Plants and Weeds in the Northern Great Plains," by Arthur C. Dillman, appears in the Journal of Agricultural Research 42(4): 187-238, figs. 1-13. February 15, 1931.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington
Experiment Farm, Rosslyn, Va., are in cooperation
with State agricultural experiment stations or
other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor) (March 31)

Approximately normal precipitation was recorded in March and early April. Spring growth of winter wheat and rye has been rapid. Rye has been in the jointing stage for 10 days and is about average in vegetative advancement, but wheat is backward.

Oats and barley sown in late September and early October failed to germinate on account of lack of moisture and rotted in the ground.

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor) (March 31) (Cont'd)

Some sowings of spring grains have been made and germination is good.

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, V. F. Tapke, Acting in Charge)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

ARKANSAS

Agricultural Experiment Station, Fayetteville (Rice Diseases, E. C. Tullis)

MISSOURI

Agricultural Experiment Station, Columbia (Rice Agronomy, B. M. King)

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

OHIO

Agricultural Experiment Station, Wooster (Corn Investigations, G. H. Stringfield)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy)

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

INDIANA

Purdue University Agricultural Experiment Station, LaFayette (Corn Rots and Metallic Poisoning, J. F. Trost, Acting in Charge)

Purdue University Agricultural Experiment Station, LaFayette (Leaf Rusts, R. M. Caldwell)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust E. C. Stakman) (M. N. Levine)

Agricultural Experiment Station, University Farm, St. Paul
(Flax Rust, C. C. Allison)

GREAT PLAINS AREA, (South to North)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)
(March 16)

The weather in February was very disagreeable and little field work was possible. Rain fell on 13 days and the total precipitation for the month was 3.77 inches, or 2.03 inches above the 19-year average. The temperatures during the month were quite uniform; the minimum was 31°F., and the maximum 70° F. The mean for the month was 2.7 degrees above normal.

The weather of the first week of March was similar to that of February. Fair weather prevailed the second week, and field work has been possible so far this week. There was a killing frost on the 9th. Fruit trees had started to blossom, and some damage was caused.

The abundant moisture and mild winter have caused unusual growth of small grains. Many wheat varieties are 8 to 14 inches tall; volunteer oats are heading; and some heading has started in the barley hybrid material. Leaf rust is abundant on susceptible wheat varieties, such as Nebraska No. 28. No crown rust of oats has been observed. Corn planting is in progress, and peach and plum trees are in full bloom.

(April 7)

The month of March was characterized by cool weather and frequent rains. The mean monthly temperature was 5.6 degrees below normal with a minimum of 25° F. on the 28th. The precipitation was 3.87 inches, or 1.91 inches above normal. The accumulated departure from normal since January 1 is 3.2 inches above normal. Nearly all the precipitation since the first of the year has been in the form of slow showers with little run-off. During most of March the soil has been saturated with water, and this combined with the cool temperatures has made growing conditions poor.

Substation No. 6, Denton
(April 7) (Cont'd)

The "norther" which occurred on March 27 and 28 caused some damage throughout most of Texas. In the Panhandle where there were minimum temperatures as low as 7 degrees the injury was serious. Only one report has been received of the condition of the cooperative wheat variety tests in that section. As they were sown later than most of the farmers' wheat they may have escaped injury. The report stated that wheat that was jointing was injured.

In this section the storm was accompanied by a slow rain of 1.14 inches and followed a few days later by another rain of 0.98 of an inch. This precipitation, combined with the freeze, caused considerable injury to corn. The damage was the result of too much water as much as the effect of the freeze. It is estimated that fully 50 per cent of the corn in the county will have to be replanted. Small grain was damaged to some extent but not seriously, and it all appears to be recovering in good shape. Fruit was nearly all killed and some gardens were injured.

As the result of a few days of warm weather crops are again growing. Vaughn barley and Nebraska No. 28 wheat are heading.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens)

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (April 1)

The winter of 1930-31 has been one of the mildest on record in the Southern Great Plains. Winter wheat made excellent fall growth and continued in fine condition throughout the winter. Most wheat in central Kansas was very heavily pastured. The winter months were very dry and there was a shortage of moisture in southwestern Kansas and adjacent parts of Oklahoma, Texas, and Colorado. In March the wheat throughout the hard-red-winter-wheat belt is in excellent condition.

Agricultural Experiment Station, Manhattan
(April 1)(Cont'd)

A very heavy fall infection of leaf rust occurred in parts of northwestern Kansas and in occasional fields of central Kansas. Early sowings frequently were severely rusted. A small area of fall-infected wheat was present also in central Oklahoma. Very little early fall infection occurred in northern Texas, but near Denton considerable leaf rust developed during the mild weather of February. Leaf rust has overwintered in considerable abundance in northern Texas and central Oklahoma, and in moderate amounts in central and northern Kansas. If early spring conditions are favorable for the rapid development of leaf rust a heavy infection may be expected in the 1931 crop of the Southern Great Plains.

Fort Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson)

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis)

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (March 31)

The landscape today has more the appearance of midwinter than of spring and seeding time. The snow which fell on March 26 is just beginning to melt. The seeding of the barley field plots had just been finished on Wednesday afternoon when it began to rain. The rain turned to snow during the night and the storm continued until Friday noon. The temperature fell to zero Thursday night, March 26, and was down to 9° the night of March 30.

There was a strong wind from the north on the 23rd. At 2:00 p. m. it was blowing at the rate of 55 miles an hour, and ranged from 50 to 60 miles. There was some soil blowing, although there was no injury to winter wheat. The storm was preceded by a strong wind from the south on Wednesday, the 25th.

Winter wheat is in excellent condition. The survival in the smut nursery is all that could be asked for. Moisture conditions at this time of year have seldom been more favorable.

North Platte Substation, North Platte (March 31) (Cont'd)

The first seeding in the date-of-seeding experiment was made on the 13th. Spring wheat varieties were sown the next day. Although the seed sprouted before the recent low temperatures no injury is expected because of snow protection. Oat varieties were sown on the 24th, and barley varieties on the 25th. It has not been possible to sow any of the spring nursery, but it is hoped that at least the spring-wheat nursery can be seeded this week.

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (March 16)

The temperature here continued warm in February, the average departure from the normal being +12° F. The precipitation totaled 1.09 inches. Early in March there were lower temperatures, and precipitation in the form of snow totaled 0.65 of an inch, but now spring is here again.

The outlook for winter wheat in this vicinity is much improved. In early November wheat was suffering for want of moisture. The timely arrival of rain and the attendant warm winter weather have combined to produce a substantial secondary root system and new top growth of 3 inches or more since January 15.

Preliminary observations in the nursery for the past week failed to disclose any trace of winterkilling, even in varieties known to lack hardiness under conditions in this locality.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden)

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (April 1)

Winter wheat has started growth for about the third time this winter. After several weeks of moderately warm weather approximately 75 per cent of the winter wheat in the nursery was showing green growth. On March 24 a strong northeast wind brought 3 inches of snow and a sudden drop in temperature. Minimum temperatures of -8°, -7° and -1° were recorded on March 25, 26, and 27, respectively. The snow accompanying the sudden fall in temperature probably prevented the entire killing of the winter wheat. Some green growth is showing at this date. The winter has been exceptionally mild. Several sudden drops from mild to low temperatures should make the percentages of winter-wheat survival at this Station of considerable interest.

Northern Great Plains Field Station, Mandan
(April 1) (Cont'd)

The earliest sowing of spring wheat in Morton County for the last five years is claimed by a farmer living about five miles west of Mandan. This year he finished sowing 20 acres of wheat on March 21. Wheat sown on the same date in 1930 is said to have yielded 20 bushels to the acre.

A total of 6-1/2 inches of snow fell in March. Hail was recorded on 4 different days. The total precipitation for the month was 1.62 inches or 0.91 of an inch above the 17-year average. In March maximum temperatures of 50 degrees were recorded on the 17th and 22nd. A minimum of -8 degrees was recorded on March 25. The mean temperature for the month was 26 degrees. The mean, maximum, and minimum temperatures for March are nearly the same as the (1914-1930) 17-year average of 27°, 37°, and 17°, respectively. It was interesting to note that the mean temperature for March was 3° lower than that of February of this year.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith)

The weather in the first half of March has been more nearly normal than during the winter. A snow of 2.2 inches fell on March 4. This was followed by colder weather, the minimum being 11° below zero on the 6th. The snow had disappeared by the 15th during a warm spell and there was a maximum of 50 degrees on that date. The soil temperature has ranged from 19 to 30 degrees the first part of March, the mean being about 27 degrees.

Most of the moisture from the melting snow has soaked into the ground, as there has been but little frost in the ground to interfere. The winter wheat still appears to be in fairly good condition.

About 200 persons were present at a farmers' meeting in Dickinson on March 12, which was conducted by Rex Willard, agricultural economist from the Agricultural College, and Charles Eastgate, local agricultural agent. Mr. Willard discussed the relation between production and price trends in grains and livestock. Two films of the U. S. Department of Agriculture on the care and management of livestock were presented.

(April 2)

The month of March was more wintry than any since last fall. Snowsqualls were frequent and a rain of 0.50 of an inch brought the total precipitation up to about an inch, which is somewhat above normal for the month. The principal blizzard of the winter

Dickinson Substation, Dickinson
(April 2)(Cont'd)

occurred in the last week of March, bringing severe cold weather for a few days and nearly three inches of snow. The temperature dropped from above freezing on March 25 to 9° below zero the next morning. The snow has since disappeared and the frost is nearly gone from the ground.

During the coldest weather of last week the winter grain in stubble was covered with about six inches of snow and the soil temperature, as shown by the soil thermograph, did not fall below 28 degrees, hence the winter grain was not injured. The wheat in the winter nursery appears to have survived the winter fairly well and with continued moist weather should not show very much winter-killing. In March the soil temperature at a depth of two inches has ranged from 18 degrees to a maximum of 47 degrees. Most of the time it was slightly below freezing.

Farmers are preparing for field work but have been prevented from getting into the field by the recent snow and showers.

Seed is being prepared for seeding the spring-wheat nursery and smut nursery.

Agricultural Experiment Station, State College Station, Fargo
(Flax Diseases, L. W. Boyle)

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith)
(April 1)

The past winter at Langdon was not so severe as the previous one. On November 21, a heavy snowstorm stopped travel by automobile. Although in most of North Dakota, this snow disappeared in a short time, an area extending a few miles each way from Langdon was snowed in all winter. February was an unusually mild month. By the middle of March the snow was rapidly melting, but on March 25 and 26 a severe blizzard blocked traffic again for a short time. The minimum temperature was -0.25 degrees on December 1.

The precipitation for the winter months was as follows:

	Inches
November	1.99
December	0.29
January	0.46
February	0.73
March	1.70

The snow has disappeared gradually so that much of the moisture has soaked into the ground.

The uniform winter-hardiness nursery does not show much sign of life. However, its condition can not be determined until later.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (April 1)

The mild, open weather of the past few months was interrupted by a dust storm and a snowstorm March 25 to 27. Temperatures for these three days ranged as low as five degrees below zero, with an average wind velocity of 12.62 miles an hour on March 25 and 18.82 miles an hour on the 27th. Appreciable soil blowing was recorded on 14 days in March, while the average wind velocity was 8.63 miles an hour. The maximum temperature was 64°; the minimum -5°. A precipitation of 0.44 of an inch was recorded.

Winter wheat on fields that had not blown noticeably had started growth prior to the low temperatures of the last storm. With no snow protection the winter wheat was killed to the ground and some permanent injury may have occurred. The extent of this injury can not be determined at this date.

The precipitation for the past 3 months has been very low, a total of 0.71 of an inch being recorded. The precipitation for January was 0.23 of an inch, for February, 0.04 of an inch, and for March 0.44 of an inch. The precipitation for February is the lowest on record at this Station except for the year 1921 when only a trace of moisture was recorded.

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, L. L. Davis)

Agricultural Experiment Station, Moscow (Wheat Improvement, V. H. Florell)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

Agricultural Experiment Station, Pullman (Stinking Smuts of Wheat, H. H. Flor)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague)

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (March 31)

The total precipitation for March at the Greenville Farm was 1.46 inches compared to 1.98 inches for a 10-year average. The total precipitation since January 1 is 2.73 inches compared with 4.90 inches for a 10-year average. The maximum temperature was 69° F. on March 22, the minimum 8° F. on March 7 and 26.

On March 7 the snow was gone in the valley and there was warm weather with showers on the 12th and 18th. There was a cold wave with snow, wind, and frost on the 26th, and since then weather conditions have been unsettled.

Seeding will be done as soon as the land dries up.

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, L. L. Davis)

University Farm, Davis (Cereal Agronomy, G. A. Wiebe)

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel) (April 3)

The cereal seedings at Mesa are making very rapid growth. By March 31 about a dozen varieties each of wheat and barley had headed. Ramona, the earliest variety of wheat in the nursery, headed on March 20. The earliest variety of barley, Multan, headed on March 21. None of the oats have headed.

The grains at Tucson have not yet started to head. Indications are that many will do so within a week or ten days.

The temperatures at Tucson for March are as follows: Mean maximum, 73.7°, maximum, 89°, mean minimum, 41.9°, and minimum, 29°. Three frosts occurred in March. The precipitation was 0.16 of an inch.

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CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 April 30, 1931 No. 8
Personnel (April 16-30) and General Issue

PERSONNEL ITEMS

Mr. L. W. Boyle, formerly in the cooperative investigations of flax diseases at Fargo, N. Dak., was transferred on April 27 to the Agricultural Experiment Station, Manhattan, Kans., where he will take up his duties in connection with the cooperative investigations of the foot-rot diseases of wheat.

Mr. C. E. Chambliss, in charge of rice technology, returned to Washington on April 27 from a three-week visit to points in Alabama, Florida, Georgia, Louisiana, and South Carolina in the interests of rice investigations.

Mr. H. H. McKinney, in charge of cereal-virus disease investigations at the Arlington Experiment Farm, has returned from a trip to St. Louis, Mo., Granite City, Ill., and Lexington, N. C., where he took notes on the mosaic experiments being conducted at these points.

VISITORS

Prof. H. L. Bolley, of the Department of Botany and Bacteriology, North Dakota Agricultural Experiment Station, was an Office visitor on April 17. Prof. Bolley was on his way home from South America where he had spent several months.

Dr. Charles Zaleski, assistant in the Laboratory of Botany and Phytopathology of the University of Poznan, Poland, was an Office visitor during the period from April 13 to 27.

MANUSCRIPTS AND PUBLICATIONS

The article entitled "Inheritance of Resistance to Bunt, *Tilletia tritici*, in Hybrids of White Federation and Banner Berkeley Wheats," by *Fred N. Briggs*, appears in the Journal of Agricultural Research 42(5): 307-313, 1 fig. March 1, 1931.

The manuscript entitled "Stunting of Wheat Caused by *Tilletia levis* and *Tilletia tritici*," by *H. A. Rodenhiser*, which was submitted on March 6 for publication in the Journal of Agricultural Research, has been withdrawn and will be published by the Minnesota Agricultural Experiment Station.

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BUREAU OF PLANT

CEREAL COURIER

Official Messenger of the Office of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 May 10, 1931 No. 9
Personnel (May 1-10) and Field Station (April 16-30) Issue

PERSONNEL ITEMS

Mr. F. A. Coffman, oat investigations, left Washington on May 6 to confer with agricultural station and Department officials, commercial seedsmen, and others concerning oat investigations, at points in the following States: Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, Missouri, Oklahoma, South Carolina, Tennessee, T Texas, Virginia, and West Virginia. Mr. Coffman will be away about six weeks.

Dr. K. S. Quisenberry, wheat investigations, who for the past two months has been engaged in passing on loan applications for the Farmers' Seed Loan Office at Fort Worth, Tex., returned to Washington on May 4.

VISITORS

Dr. R. H. Porter, extension plant pathologist, Iowa State College, Ames, Iowa, was a visitor in the Division on May 5.

MANUSCRIPTS AND PUBLICATIONS

27 A manuscript entitled "Methods of Determining Glucose and Fructose in Corn Tissues," by V. H. Morris and E. F. Wesp, was approved on May 6 for submittal to Plant Physiology.

30 A manuscript entitled "Spore Germination of *Puccinia glumarum* with Notes on Related Species," by J. M. Raeder and W. M. Bever, was approved May 8 for submittal to Phytopathology.

Galley proof of Farmers' Bulletin No. 1240, revised, entitled "How to Grow Rice in the Sacramento Valley," by Jenkin W. Jones, was read on May 5.

Galley proof of Technical Bulletin No. 244 entitled "Harvesting Small Grains, Soybeans, and Clover in the Corn Belt with Combines and Binders," by L. A. Reynoldson, W. R. Humphries, and J. H. Martin, was read on May 5.

The article entitled "Growth Habit and Yield in Wheat as Influenced by Time of Seeding," by B. B. Bayles and J. F. Martin, appears in the Journal of Agricultural Research 42(8): 483-500, figs. 1-4. April 15, 1931. (Cooperative investigations between the Oregon Agricultural Experiment Station and the Division of Cereal Crops and Diseases).

B. P. I. Memo. 576 April 22, 1931

MEMORANDUM TO HEADS OF OFFICES.

Gentlemen:

In the interest of simplification, the Office of the Secretary has suggested the standard use of the term "Division" to designate units reporting directly to the Chief of Bureau. It is believed that the use of this term generally will be helpful to people outside of the Department in understanding references to branches of the Bureau, whether appearing in publications or in correspondence. Accordingly, hereafter all branches of the Bureau heretofore referred to as offices or laboratories will be known as Divisions. This terminology to be uniform should be used in connection with letterheads, correspondence generally and in all printed matter where the title of the unit is used.

Very sincerely,

(Signed) Wm. A. Taylor

Chief of Bureau.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

Coastal Plain Experiment Station, Tifton (Corn Breeding, H. S. Garrison) (April 28)

The corn-breeding experiments were planted April 13 to 16. Conditions were just right for planting and germination, and the corn has an excellent start. The new location allotted to corn breeding promises to be very satisfactory for the work.

Mr. C. E. Chambliss was a recent visitor at the Station.

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

Arlington Experiment Farm, Rosslyn (Corn Breeding, F. D. Richey)

Arlington Experiment Farm, Rosslyn (Cereal Smuts, V. F. Tapke, Acting in Charge)

Arlington Experiment Farm, Rosslyn (Virus Diseases, H. H. McKinney)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (Cereal Breeding, H. H. Love)

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins)

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg)

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer)

ARKANSAS

Rice Branch Experiment Station, Stuttgart (Rice Production and Improvement, C. R. Adair)

Agricultural Experiment Station, Fayetteville (Rice Diseases, E. C. Tullis)

MISSOURI

Agricultural Experiment Station, Columbia (Rice Agronomy, B. M. King)

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler)

OHIO

Agricultural Experiment Station, Wooster (Corn Investigations, G. H. Stringfield)

IOWA

Agricultural Experiment Station, Ames (Oat Breeding, L. C. Burnett)

Agricultural Experiment Station, Ames (Corn Breeding, M. T. Jenkins)

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy) (May 6)

All the oats were seeded April 7, 8, and 9. Conditions have not been particularly favorable for oats during the past two or three weeks. However, with good weather and sufficient rainfall from now on there should be a normal crop. The oats emerged in good shape and are now in about the 2-leaf stage.

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert)

INDIANA

Purdue University Agricultural Experiment Station, LaFayette (Corn Rots and Metallic Poisoning, J. F. Trost, Acting in Charge)

Purdue University Agricultural Experiient Station, LaFayette (Leaf Rusts, R. M. Caldwell)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus) (May 2)

The winter of 1930-31 has been one of the mildest on record. Winter wheat in this section is in very good condition. The survival in the more winter-hardy varieties grown at University Farm was good, while some of the less hardy varieties were severely injured. There was considerably more winter injury in the winter wheats grown at the Waseca Station in southern Minnesota than at University Farm.

The weather in April was favorable for field work. On several days there was high wind accompanied by dust. April 12 was especially bad. The weather has been very cool for the past few days, temperatures below 32° F. being recorded on April 22, 23, 26, and 27. The minimum temperature for these days was 30°, 28°, 28°, and 29°, respectively.

The seeding of the spring cereal grains has been completed with the exception of some material in the rust nursery. The first seeding was of the spring-wheat varieties in the field plots on April 2. The cool weather has retarded emergence.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust E. C. Stakman) (M. N. Levine)

Agricultural Experiment Station, University Farm, St. Paul (Flax Rust, C. C. Allison)

GREAT PLAINS AREA (South to North)

TEXAS

Texas Agricultural Substation No. 4, Beaumont (Rice Production and Improvement, H. M. Beachell) (May 1)

The rice nursery was sown on April 23 and 24. The seed bed was very dry at that time, but there was about an inch of rain last night and the seed should sprout immediately.

Twelve varieties were sown in replicated plots (4 series), as follows: Fortuna, Lady Wright, Early Prolific, Honduras, Acadia Jap, Caloro, Colusa, Rexoro, Stormproof, Edith, Blue Rose Supreme, and Delitus. The two crosses, 1600 x Lady Wright and Caloro x Lady Wright, were sown in single plots.

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins) [April 15]

The weather for the past two weeks has been clear and favorable for the growth of crops. Only 0.19 of an inch of precipitation has been recorded. This has permitted fields to dry so that corn could be replanted; where it was not necessary to replant, corn has made normal growth. Small grains are making good growth but in spite of the excessive rainfall of March will soon need some additional moisture. Nebraska No. 28 wheat is fully headed and other early varieties are starting to head. Nearly all the barley varieties are headed. Early oats, such as Frazier, also are heading.

In the past week 27 strains of corn were planted in a uniform smut test for Dr. Rodenheiser.

Mr. H. G. Ukkelberg, agent in barberry eradication and stem-rust investigations, was a visitor on April 11. He reported that no stem rust had been found thus far on his trip south. No rust was found on the Substation, although leaf rust is plentiful.

(May 4)
April was characterized by cool weather and a deficiency in rainfall. The mean temperature for the month was 59.6° F., which is 4.1° below normal. The maximum was 84° and the minimum 31° F. A killing frost occurred on the 22nd, when the minimum of 31° was recorded. Tender vegetables were injured but otherwise no damage resulted. The total rainfall for the month was 1.71 inches, a

deficiency of 2.88 inches. The cool weather was favorable for the small grains, as they would have suffered from the lack of rainfall if the weather had been seasonable.

Prospects for small grain in this vicinity are quite favorable. Barley varieties are headed, fall oats are heading, and many early wheat varieties are fully headed. None of the rusts except leaf rust are present. Reports from the cooperative wheat tests in the Panhandle are encouraging. General rains have been received over most of that section during the past few days, which should further improve the prospects for a crop.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens) (April 16)

Since the blizzard of the last week of March weather conditions have been normal. Vegetation is recovering from the setback received by 10° temperatures on March 26 and 30.

The maximum temperature for March was 79° on the 11th, and the minimum was 10° on the 26th and 30th. For the first half of April, a maximum of 85° on the 7th and a minimum of 28° on the 5th were recorded. The precipitation for March was 4.31 inches, of which 1.51 inches was in the form of snow on the 28th and 29th. The precipitation for April to date has been 0.22 of an inch.

Some of the earlier wheats, which were quite well jointed, were retarded by the March freeze. Considerable lodging of injured plants occurred in varietal plots of Early Blackhull and Nebraska No. 28, and in early varieties in the nursery. However, new tillers are appearing on these badly injured plants, and little actual killing of wheat resulted from the severe late freeze. The Turkey wheats were not injured beyond the killing of a few leaves. A few varieties of spring barley and of spring oats in the nursery had just emerged when the freeze came. The barleys survived to a good stand, but the oats show spotted killing.

Wheat is growing vigorously now, and heading will begin within two weeks. At present prospects for a good crop are excellent.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker)

Agricultural Experiment Station, Manhattan (Corn Breeding, A. M. Brunson)

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows)

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston)

Fort Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson) (April 29)

Since late March the Hays district has been subjected to a wide range of weather conditions. First, there was a blizzard of driving wet snow followed by a sudden drop in temperature. Thousands of cattle were lost on the western plains because of the sudden approach of the storm and the inability of the cattlemen to round up their herds. In many cases cattle drifted with the storm until they found shelter behind embankments. No storm since 1886 has been more severe. It is said that in 1886 only 10 per cent of the cattle survived in this district.

April has been a rainy month with temperatures fairly moderate. As a result, the Kansas wheat crop never has looked better on the surface; but the danger lies in the fact that the growth and tillering has been too rapid and vigorous. The crop is likely to be affected by rust and lodging if there are continued rains in May and June. If droughty conditions prevail in May or June the stored moisture will not be sufficient to carry the crop through. This is a year where poor methods or late-sown wheat may have an advantage.

Conditions are exceedingly favorable for all spring and row crops.

The eighth annual live stock and grain judging contests were held on April 24 in connection with the nineteenth annual round-up which took place on the following day. Seventy-seven teams from high schools and 4-H clubs of western Kansas participated in these contests. The attendance for both days was reduced because of rain and muddy roads.

N. O. Kanitkav, soil physicist from Bombay, India, spent 10 days at this Station, studying methods of dry-land farming.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis) (April 11)

The past winter has been one of the mildest on record at Akron. The minimum temperature of the winter was 5 degrees below zero on March 26.

The fall of 1930 was a little too dry for well-established stands of wheat on cornland. Full emergence on the cornland occurred during the winter or very early spring. All varieties of winter wheat came through the winter in good shape, as judged by stand data taken April 8, particularly on the fallow land. A little winterkilling was noted on the cornland. The growth of winter wheat is in advance of normal for this season of the year.

Although some varieties of wheat were frozen back by the low temperature the latter part of March, the injury does not appear to be permanent.

Barley and oats were sown in the varietal experiments on March 20 and 21, respectively. The first seeding of spring grains in the date-of-seeding experiment was made on March 24. Thereafter field work was delayed by a blizzard on March 26 until the past week, when the spring nursery was sown.

Dr. D. W. Robertson and Mr. Wayne Austin of the Colorado Agricultural College were here on Wednesday, April 8. They helped to take notes on the condition of the winter wheat in the varietal experiment and in the uniform winter hardiness nursery. Mr. Wiehling, who accompanied them, remained for a few days to assist in seeding the spring nursery.

The maximum temperature for March was 70° on the 22nd, minimum -5° on the 26th. The precipitation was 0.95 of an inch. The average March precipitation was 1.04 inches.

(May 1)

April has passed with a precipitation of but 0.84 of an inch. The 23-year average precipitation for April is 2.21 inches. The late fall and winter precipitation insured sufficient soil moisture to prevent any apparent injury to fall and early spring sown small grains.

Following the blizzard of March 26, warm weather prevailed, encouraging a succulent growth of all small grains. On April 20 a minimum temperature of 19 degrees was especially severe on these crops, even nipping the tips of such crops as winter wheat. The past 10 days have shown that this frost injury was merely of a temporary nature.

An evidence of the mildness of the past winter was the finding of living volunteer barley plants on the cereal project.

In the past week cereal varietal plots were trimmed to regulation 132-feet length and the roadways worked with the duck-foot cultivator. Stubble land fallow for next year's cereal varietal experiment was plowed and packed during the past week. The relatively early plowing was necessary because of the abundance of volunteer grain on this ground.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (April 29)

Winter wheat was slightly injured by the zero temperature in March, the tips of the leaves being frozen back. However, this was not a serious setback, as it is making a very rank growth at present. There are already some signs of lodging in a few strains as a result of a snowstorm which began the evening of the 22nd and continued until the morning of the 25th. More than 0.75 of an inch of precipitation was recorded in the form of snow. Low temperatures for the latter part of the month were 23° on the 21st, and 21° on the 25th.

The spring-grain nurseries were sown on the 6th, 7th and 8th and emerged on the 14th and 15th. The first sowing of the date-of-seeding experiment and the spring-wheat varietal plots, both sown on March 13, emerged on April 8. Barley and oat varieties sown the 24th and 25th of March emerged on April 13. The emergence was somewhat hindered by a hard crust left by the snow, as was shown by the fact that the second-date of seeding (April 4) emerged on the 15th.

A Smith-Hughes High school contest was held at the Substation on April 16 and 17. There was a registration of 250 boys from 18 schools in western Nebraska. Eleven teams competed in the grain judging and identification contest, and eight teams entered the grading contest.

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (May 1)

The rainfall in April totaled 1.75 inches. This brings the total for the year to 4.41 inches. A killing frost occurred on the 27th, which is 10 days later than the average date.

There was some winterkilling in the nursery in the past winter, but since only the more hardy varieties were injured it seems that factors other than low temperature were responsible -- probably fall drought. Prospects for good yields of wheat in this section are constantly improving.

Spring grains are making normal growth. Corn planting is scheduled to begin on May 4.

During the period from April 15 to 18 the writer visited central and western Nebraska. The extremely favorable appearance of wheat in central Nebraska justifies the late crop report which places the condition of Nebraska winter wheat at 96.

At the Alliance experiment station, winterkilling varied from a trace to 60 per cent in the varietal plots. Soil blowing was also injuring wheat in that area. Considerable killing of alfalfa from cold in the near-by Scottsbluff area has also been reported.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden)

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (May 2)

The past April was the driest except one in this locality since records of precipitation were first taken in 1914. The total precipitation in April this year was only 0.43 of an inch. The average precipitation in April for the past 17 years was 1.41 inches. The usual swelling of the streams with the passage of the ice did not take place this year. The little ice that formed in the winter in the Heart River gradually melted away, causing little appreciable rise of the water level. Warm weather prevailed during the first half of April.. Nights were generally cold during the last half of April. Temperatures below freezing were recorded every night from April 18 to 26, inclusive.

Weeds, especially Russian thistles, came up in great numbers much earlier than usual and made rapid growth during the first half of April. The last half of April was too dry and cold for much weed growth.

Cutworms have commenced activities much earlier than usual. Grasshoppers are also earlier than usual.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (April 18)

The weather has been changeable this month, and it often has been dry and windy. Severe winds caused soil drifting on some of the lighter soils in the vicinity of Dickinson. A few showers the first week supplied 0.18 of an inch of moisture.

Good progress has been made in seeding at the Substation and on farms in this locality. Varietal plots of spring wheat were sown on April 16, and of oats and barley on April 17. Rod rows of wheat and oats, also the rust nursery, were sown on April 13 and 14. With the help of an assistant, the bunt nursery, consisting of 1,048 rows, mostly plant rows of hybrids in the F_4 and F_5 generations, and the seed-treatment experiment, were sown on April 15. The first seeding in the rate-and date of seeding experiment with three wheat varieties in plots, and the first seeding in the date-of-seeding smut experiment, have been made. It is planned to sow barley varieties in the nursery the first of next week.

The dry soil conditions may delay germination to some extent, but it is thought that sufficient moisture is present to germinate most of the seed.

Winter wheat and rye sown in stubble have come through the winter with fairly good stands, but rain is badly needed to produce normal growth. In the plant rows of wheat x rye sown on fallow, most of the plants apparently have died since the opening of spring. Check rows of Dakold rye show good survival, while checks of Kanred wheat are mostly dead. The wheat x rye hybrids thus resemble the wheat in hardiness more than the rye, the former having been back crossed with wheat. Similar hybrids sown in stubble show a fairly good survival, as do the selections of H-44 x Minhardi winter wheat.

The first sowing of flax in the date-and-rate-of-seeding-and tillage experiment was made on April 20. The ground has been too dry and cold for germination. The second seeding was made on April 30.

The land for the flax-nursery experiment is all prepared for sowing. Most of the flax-nursery sowing probably will be done the first week in May.

The maximum temperature for the last half of April was 83° on April 17; the minimum was 18° on April 25.

(May 1)

Temperatures varied considerably in April, but moisture conditions were more uniform, dry weather prevailing since the first week. The total precipitation for the month was 0.11 of an inch, making the past month the driest April recorded at Dickinson since 1905. The precipitation for March was slightly above normal, but the winter snowfall was below normal.

As a result of low precipitation and windy weather the surface soil is dried out and subsoil moisture is not plentiful. Ground that has not been stirred since last fall, as in the winter-wheat plots and nursery, is badly cracked and drying out.

Spring wheat sown in the nursery on fallow is emerging with apparently good stands, while that in plots on cornland is more uneven in stand. The stand of oats probably will be uneven until more rain falls to soak the seed not now germinating.

Winter-survival notes were taken this week on all winter grain in plots and nursery, showing a high percentage of survival. Winter grain is suffering from lack of moisture.

Army cutworms are very numerous in this vicinity and outbreaks are reported from many places in western North Dakota and eastern Montana. Some injury has been done to the winter-wheat nursery, and especially to alfalfa. As many as 20 worms per square foot of surface have been counted in several places in the alfalfa. Further injury has been checked by spreading poisoned bran.

The substation was visited this week by the following entomologists; Dr. J. R. Parker and R. L. Shotwell from Bozeman, Mont., and C. N. Ainslie from Sioux City, Iowa. They report that the army cutworms have about completed their active stage and will soon disappear, to emerge from the ground in the summer as adult moths and then lay eggs for next year's crop of worms, if not prevented by natural enemies and unfavorable conditions. Dr. Parker and Mr. Shotwell installed a new combined soil and air thermograph at the Substation for the purpose of obtaining records of soil temperatures to correlate with the hatching of grasshopper eggs.

Dr. H. H. Flor visited the Substation this week while en route from Pullman, Wash., to Fargo, N. Dak. Director P. F. Trowbridge of the North Dakota Agricultural Experiment Station, C. Church of the State Board of Administration, and M. B. Johnson of the Bureau of Animal Industry, also were visitors in April.

Agricultural Experiment Station, State College Station, Fargo, (Flax Diseases, H. H. Flor)

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (April 15)

The first field work of the season is being done this week in the Langdon area. The weather for the past two weeks has been generally warm and drying, with considerable wind. The precipitation for the first two weeks of April totalled 0.50 of an inch. The first thunder shower followed in the evening of the warmest day, April 14, when a maximum temperature of 75 degrees was recorded.

The ground for the nursery and varietal plots will be worked this week and seeding will begin in three or four days, weather permitting. Seed for the nursery and varietal plots has been weighed out and seeding plans have been arranged so that the work should go forward rapidly as soon as conditions are suitable. Seeding was not started in 1930 till the last week in April.

The uniform winter-hardiness nursery appears to be starting some growth in the more hardy varieties. However, stands do not look very healthy.

(April 30)

The last half of April passed without precipitation, except occasional snow flurries. In general the weather was cold, windy, and unsettled. The maximum temperature for the month was 80°, recorded on the 18th, and the minimum was 10° recorded on April 3 and 4.

The spring-wheat varieties were seeded on April 17, or 8 days earlier than in 1930. Nursery seeding was started on the 18th, which was one week earlier than in 1930. The week from April 20 to 25 was very cold and disagreeable. Practically no field work was possible except on some of the days when the ground thawed out somewhat by afternoon. The wheat previously sown had started to germinate and it remains to be seen whether or not temperatures of 14 and 15 degrees recorded this week did any damage. Seeding is now complete except for some hybrids which will not be sown till later.

There proved to be no complete killing in the uniform winter-hardiness nursery. Survivals as high as 50 per cent were recorded.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, Harland Stevens) (April 29)

The precipitation for April was 0.96 of an inch. The average maximum temperature was 61° and the minimum 29.2°, which was slightly above the 10-year average for the period 1921 to 1931.

The first grain was sown on April 8, being about 10 to 15 days later than the average date for this part of the country. This delay was caused by the wet condition of the soil resulting from late snows.

Germination has been very slow on account of the cold windy weather which did not allow the soil to warm sufficiently and also dried it too fast. A rain on the 23rd altered this condition somewhat.

All general nursery seeding has been completed and the rod-row material has just started to emerge. Germination is satisfactory.

Agricultural Experiment Station, Moscow (Wheat Improvement, V. H. Florell)

Agricultural Experiment Station, Moscow (Stripe Rust, C. W. Hungerford)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, E. F. Gaines)

Agricultural Experiment Station, Pullman (Stinking Smuts of Wheat) . . . .

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague)

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (May 1)

Fine weather prevailed the first part of April. Seeding of the nursery was started on the 8th and was completed on the 17th. Crops are up and appear very satisfactory. Winter wheat is farther along than usual for this time of year.

The precipitation for April was 0.44 of an inch, compared with 2.32 inches for a 10-year average. The total rainfall since January 1 is 3.17 inches, compared with 7.22 inches for a 10-year average.

The evaporation for April is 2.49 inches, compared with 3.09 for a 10-year average.

The minimum temperatures were 20 degrees F., recorded on the 1st, and 21 degrees, recorded on the 22nd. The maximum temperature was 78 degrees, recorded on the 7th.

Following the cold spell of the 22nd, the State was swept by a heavy east wind which lasted 48 hours. The maximum velocity, according to reports, ranged from 60 to 70 miles an hour. There was much damage to property throughout the State.

Several fields needed resowing on account of erosion. Grain and tender plants that emerged before the wind were torn to pieces but have since recovered. A high wind such as the one just experienced is very unusual in this region.

CALIFORNIA

Biggs Rice Field Station, Biggs (Rice Agronomy, L. L. Davis)

University Farm, Davis (Cereal Agronomy, G. A. Wiebe)

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel) (May 5)

The grain in the experiments is growing very rapidly. Heading has taken place in most of the varieties of wheat and oats and in all varieties of barley. Some of the earlier varieties of wheat and barley are almost ripe.

Weather conditions in this section have been about normal for April. The maximum temperature was 89.0°; minimum, 44.0°; mean maximum 81.5°, and mean minimum 52.9°. The total precipitation was 0.48 of an inch, 0.39 of an inch having been recorded on April 23.

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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 May 20, 1931 No. 10
Personnel (May 11-20) and Field Station (May 1-15) Issue

PERSONNEL ITEMS

Mr. B. B. Bayles left Washington on May 15 for points in Arizona, California, Idaho, Kansas, Montana, Oregon, Utah, and Washington, where he will confer with officials of agricultural experiment stations and field employees of the Division and look over cooperative cereal experiments. Mr. Bayles will give special attention to wheat, studying varieties and hybrids in breeding nurseries and observing wheat conditions in general.

Mr. F. A. Coffman wrote on May 18 en route from Georgia to Mississippi that small grain crops in general were in good condition but later in development than usual due to cool weather. Oats everywhere are full of smut. Possibly there are higher percentages of infection in Fulghum than in Appler or Red Rustproof. On an average there probably is three times as much smut in Fulghum.

Mr. Coffman found not more than a trace of crown rust of oats in South Carolina, Georgia, and Florida. At Gainesville, late seeded Green Mountain was the only variety having sufficient infection to make a reading possible. Oats sown at the usual date at Gainesville are not rusted. As a whole, oats came through the winter in excellent condition throughout the South. The acreage appears to be larger than it was at the time of Mr. Coffman's visit five years ago. The yield should exceed the average considerably.

There seems to be more than the usual interest in oats in this section. The growing of mixtures of oats and vetch and oats and Austrian winter peas for hay apparently is increasing. Either mixture produces a good hay.

Mr. A. C. Dillman left Washington May 12 for Crowley, La., San Antonio, Texas, and Parsons, Kansas, to take notes on experiments with flax and to confer with experiment station officials regarding cooperative investigations.

Dr. H. B. Humphrey left Washington on May 16 to visit points in Georgia, Florida, South Carolina, Tennessee, Mississippi, Louisiana, Texas, Arizona, California, Oregon, Washington, and Idaho. He will take notes on cooperative field and nursery experiments and discuss plans for further cooperative research on cereal rusts.

Mr. Jenkin W. Jones wrote on May 15 on his way back from California, that the spring weather had been very favorable for rice growing at Biggs and that from indications stands on the Station plots would be very satisfactory. Mr. Jones had received letters from Mr. J. Mitchell Jenkins, Crowley, La., and Mr. B. M. King, Elsberry, Mo., stating that they had seeded part of their rice under favorable conditions. Mr. C. Roy Adair reported that rice seeding would begin about May 7 at Stuttgart, Ark.

Mr. C. H. Kyle returned to Washington May 16. He reported that spring conditions were very favorable to the corn in the cooperative experiments at Tifton, Ga. While the weather was a little cool for the best growth, insect damage up to May 14 had been relatively light. Corn in the experimental plots had been cultivated twice and the stand was excellent.

At Baton Rouge, La., and Florence, S. C., in the cooperative corn plots insect damage is again rather heavy. It is of course too soon to determine how serious it will be.

The appointment of Karl P. Link, agent in the cooperative cereal-disease investigations at Madison, Wis., was terminated February 28.

Dr. H. C. Murphy is on a 5-week trip to points in Missouri, Illinois, Tennessee, Georgia, Florida, South Carolina, Alabama, Mississippi, Louisiana, Texas, Oklahoma, Arkansas, Kansas, and Nebraska. He will take notes in the cooperative uniform crown-rust nurseries and on the distribution and severity of crown rust in fields in the Gulf and South Atlantic States and Oklahoma and Kansas.

Mr. H. S. Smith, junior administrative assistant, returned to Washington on May 11 from Memphis, Tenn., where he spent about two months assisting in field work connected with seed, feed, fertilizer, and fuel and oil loans for the Farmers' Seed Loan Office.

VISITORS

Prof. H. P. Barss, Oregon State Agricultural College, was a visitor in the Division on May 8.

Dr. Winifred E. Brenchley, head of the department of botany of the Rothamsted Experimental Station, England, and well-known authority on mineral-deficiency problems in crop production, is visiting experiment stations and laboratories in the United States and Canada. Dr. Brenchley was a visitor in the Division of Cereal Crops and Diseases on May 13.

Dr. Douglas H. Campbell, formerly head of the department of botany, Stanford University, was a visitor in the Division at the time of the sessions of the National Academy of Sciences.

MANUSCRIPTS AND PUBLICATIONS

31 A manuscript entitled "Factors Affecting the Development of Loose Smut in Barley and its Control by Dust Fungicides," by R. W. Leukel, was submitted on May 12 for publication in the Technical Bulletin series.

33 A manuscript entitled "Physiologic Specialization in *Puccinia graminis secalis*," by Ralph U. Cotter and Moses N. Levine, was submitted on May 16 for publication in the Journal of Agricultural Research.

32 A manuscript entitled "The Experimental Modification of Heredity in Crop Plants. II. Induced Mutation," by L. J. Stadler, was approved on May 13 for submittal to Scientific Agriculture.

34 A manuscript entitled "A Review of Recent American Literature on Mineral-Deficiency Diseases of Economic Plants," by Harry B. Humphrey, was approved on May 15 for submittal to a French journal.

35 A manuscript entitled "A Cytological Study of Heterothallism in *Puccinia triticina*," by Ruth F. Allen, was submitted on May 18 for publication in the Journal of Agricultural Research.

36 A manuscript entitled "Use of Expressed Sap in Determining the Composition of Corn Tissue," by J. D. Sayre and V. H. Morris, was approved on May 20 for submittal to Plant Physiology.

The article entitled "A Genetic Study of Wheat X Rye Hybrids and Back Crosses," by Victor H. Florell, appears in the Journal of Agricultural Research 42(6): 315-339, figs. 1-7. March 15, 1931. (Cooperative investigations between the Division of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

The article entitled "A Cytologic Study of Wheat X Rye Hybrids and Back Crosses," by Victor H. Florell, appears in the Journal of Agricultural Research 42(6): 341-362, figs. 1-9. March 15, 1931. (Cooperative investigations between the Division of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

ADMINISTRATIVE NOTES

Because of the Saturday half holiday law for Federal employees, in all instances of employment by the day or by the hour, vouchers covering more than 4 hours' service on Saturdays need to carry an explanation of the necessity for more than half a day's employment.

It will be necessary to return any such voucher which is not accompanied by a statement.

Further instructions will be given as soon as a decision is received from the Comptroller.

H. S. Smith,
Junior Administrative Assistant

B. P. I. Memo. 582 May 8, 1931

MEMORANDUM FOR HEADS OF DIVISIONS

Gentlemen:

We are in receipt of a memorandum from the Director of Personnel and Business Administration reading as follows:

> "The General Accounting Office in a recent communication has drawn attention to the frequent absence on purchase vouchers of information as to point of delivery and use of articles as between the District of Columbia and the field in cases where this information has a direct bearing upon the legality of the purchase. The two instances cited are first, purchase of books of reference, permissible so far as the appropriation chargeable is concerned if for use in the field but prohibited under the general statutory restriction if for use in Washington, and, second, purchase of chemical material of a class and grade covered by the general supply schedule, permissible if for field delivery and use, since the general supply contract without special provision therefor does not cover the field, but in conflict with the general supply contract if for D. C. use.
>
> "This criticism is obviously merited, and it is requested that steps be taken that hereafter notation as to point of delivery and use appear on purchase vouchers in all cases where this information bears upon the legality of the transaction, as in the instances above cited."

The Heads of Divisions are requested to call this matter to the attention of all members of their staff having occasion to make purchases on letters of authorization, and all vouchers covering such purchases should be carefully reviewed to see that when they are for field use and there may be some legal objection to the purchase of a similar article for Washington use, that the voucher is properly marked, indicating that the purchase was for field use.

Very sincerely,

(Signed) Wm. A. Taylor.
Chief of Bureau.

Note: It is urgently requested that purchase vouchers show use of articles or supplies procured.

H. S. S.

ANNOUNCEMENTS

The meetings of the Western Branch of the American Society of Agronomy will be held at Logan and Nephi, Utah, on July 9, 10, and 11.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor)

The precipitation from May 1 to 23, inclusive, totals 3.43 inches, or about the average for May. However, the deficiency in rainfall for the first five months of 1931 is still approximately 3.75 inches. Winter wheat and spring oats have a fine appearance. Winter rye headed approximately 10 days later than usual. Winter wheat is heading rapidly and will be about five days later than usual. Spring oats sown February 25 is at the first heading stage.

More loose smut of wheat than usual is present in the varietal plots, especially in Purplestraw. Loose smut of rye is also present after not being noticed for five or more years. Leaf rust of wheat has not yet gotten under way.

Much of the land ordinarily sown to winter wheat in Virginia and West Virginia is in spring oats. Cool weather is needed, as much of the seeding was done in late March and early April.

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (May 20)

Temperatures in April were low as compared for the same period in 1930. The absolute maximum was 87° F., and a temperature of 80° or above was recorded on only 10 days, while last year a temperature of 80° or above was recorded on 25 days. The absolute minimum temperature for the month was 39° F. Last year the lowest temperature in April was 49° F.

Tho total precipitation for April was only 0.97 of an inch. This approached closely the low record of April 1915. The total precipitation for April, 1930, was 1.32 inches, and the 20-year average for this month is 3.42.

While the precipitation was very light it was well distributed throughout the month, thus aiding greatly in seed bed preparation, and enabled farmers to proceed in their work with little interruption.

The cool dry weather retarded the growth of early sown rice, and in some instances made it necessary to reseed. Where germination has been delayed certain grasses have gained considerable headway, and probably will result in reduced yields.

Station work comprised the preparation of land for seeding, sowing of the rice nursery, and the sowing of some fields to soybeans.

The cotton plots in the rotation and in the potash experiments were seeded and are up to a good stand.

Among recent visitors were, R. H. Wyche and H. M. Beachell of the Texas Agricultural Substation No. 4, Beaumont, R. M. Jamison, Mount Royal Rice Mill Ltd., Montreal, Canada, Chas. E. Chambliss, and Dean C. T. Dowell and Dr. A. H. Meyer of the Louisiana State University.

GREAT PLAINS AREA (South to North)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins) (May 15)

In the first 15 days of May the total precipitation was only 0.57 of an inch. This combined with the deficiency of rainfall in April is causing spring oats to suffer from lack of moisture. Winter wheat and fall sown oats are in better condition. The mean temperature has been considerably below normal, however, and the prevailing wind has been from the north. This has been favorable for the small grains, but corn and cotton have made very slow growth. Crown rust of oats was found for the first time on May 9 but no stem rust has been found on the Substation although it is present in a few fields in the community. Loose smut of wheat is more prevalent than has ever been known, many fields running 25 to 30 per cent.

All wheat varieties are fully headed and Nebraska No. 28 wheat is starting to ripen. Spring sown oats are starting to head. Barley varieties are ripening. All fall sown grains are very rank. Some of the wheat varieties in the varietal experiment are fully 5 feet tall. Oats in this section are exceptionally fine and several fields give indications of yields close to 100 bushels an acre.

Mr. H. K. Ukkelberg was a visitor at the Substation again on May 9 on the return trip from observing the development of stem rust in the southern part of Texas and old Mexico.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens) (May 15)

The maximum temperature for the first half of May was 94° on the 15th, and the minimum 39° on the 12th. The precipitation for the first half of May totaled 0.81 of an inch, all of which fell on the first six days of the month.

All varieties of wheat in the varietal experiment and all except a few in the nursery, have started to head. Kanred x Prelude, C. I. No. 8886, was the first variety in the varietal plots to be marked fully headed. Although Nebraska No. 28 and Early Blackhull were the first varieties to head, they are not yet fully headed because of late tillers which came after the freeze at the end of March. Four plots of composite-hybrid winter barley are fully headed and have a fine appearance.

Conditions in general are still favorable for very satisfactory yields, although heavy vegetative growth and warm weather are rapidly depleting the soil of moisture.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker) (May 13)

The following is an outline of the cooperative nursery experiments with oats at Manhattan.

The yield-test nursery comprises the so-called advanced, replicated, triplicated, and single rod row series. The advanced nursery contains 12 strains, including two selections or strains of Burt, one of Early Red Texas, two of Kanota, and five of Fulghum, and one each of Victoria and Alaska. Kanota is used as a check variety. The Victoria oat is highly resistant to crown rust, and definite information on its yielding power should be of marked interest. These varieties and strains are grown in 3-row plots in each of five series.

The replicated nursery includes 54 varieties and selections with a check of Kanota every 9th plot. There are four selections of Burt, one of Burt x Sixty-Day, eight of Early Red Texas, and 11 of Fulghum and Kanota. Three Ruakura and one Culberson strain, and 20 Australian and a few other varieties also are included in this nursery. These varieties and strains are grown in 3-row plots in each of three series.

The triplicated nursery includes 512 varieties and strains. These are grown in single rod rows in each of three series. This nursery includes 24 selections of Burt, 45 of Fulghum and Kanota, and 17 of Red Texas. It also includes 56 Australian varieties and nine strains of the crown-rust-resistant Victoria variety; 59 F_5 smut-resistant lines of the Fulghum x Markton; 30 F_6 crown-rust resistant lines of the Fulghum x Green Russian; 27 stem-rust-resistant lines of the Fulghum x Richland crosses. The remaining material in this nursery consists of various miscellaneous sorts and the smut-resistant strains obtained from the Coker's Pedigreed Seed Co., Hartsville, S. C.

The single rod row nursery, that is, one row of each sort, includes about 75 miscellaneous varieties, selections, and crosses, with Kanota check every 10th row.

Other nursery seedings include the cooperative uniform crown-rust nursery of 50 varieties that are being grown in single rod rows; 100 recent foreign introductions obtained from Australia, Manchuria, Sweden, England, and Wales, for observation relative to crown-rust resistance; numerous panicle selections of species and varieties grown in plant or head rows; and about 100 F_4 lines of the Markton x Fulghum, and 360 F_4 lines of the Markton x Kanota; about 90 F_5 lines of the Fulghum x Markton, and some F_3 lines of the Ferguson Navarro x Markton, and Ferguson Navarro x Red Rustproof crosses. In addition, F_2 crosses of Nortex, Burt, Fulghum, and Kanota on Victoria, and Burt x Fulghum are being grown. These crosses were made primarily to develop crown-rust-resistant strains.

There was prompt and reasonably uniform germination in nearly all varieties and strains. Growth is normal with the exception of a few spots where soil apparently had been injured by bindweed spray last year, and where treated seed of the strains received from the Coker Seed Company was used in which germination was slow and growth weak.

The oat nursery will be trimmed and stakes set this week. All of the short rows in the crown-rust and hybrid nurseries already have been marked. Notes on stand and habit of growth of these short rows have been taken.

In the following outline of the winter-wheat nursery experiments at Manhattan is shown the division of the material growing in rod rows.

1. Advanced nursery containing 18 of the more outstanding varieties and strains such as Kanred, Tenmarq, and several of the more outstanding hybrid strains. This material is grown in 3 row plots replicated 5 times.

2. Replicated nursery containing 91 strains each grown in 3-row plots replicated 3 times.

3. Uniform winter-hardiness nursery composed of 30 strains in 3-row plots replicated 3 times.

4. Triplicated series made up of 472 newer strains grown in single rows replicated 3 times.

5. In single rows are being grown about 300 strains which have only recently been selected.

In the hybrid nursery is material in the F_2, F_3, and F_4 generations. Various crosses combining the better adapted wheats of Kansas are being studied. Crosses have been made with early, winter hardy, stiff-strawed, nonshattering, disease-and-insect-resistant wheats, with the object of producing better adapted wheats for Kansas and the adjoining States.

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (May 12)

The first 11 days of May were unseasonably cold and there were many periods of cloudy, rainy weather in the Central Great Plains. There were several rather severe frosts late in April, and winter wheat in lodged spots in the rust nursery was severely injured. It also has been reported that certain varieties in the Harper nursery in southern Kansas had been considerably injured by late frosts. No severe damage in commercial fields has been reported, however.

The season has been much too cold for the rapid development of either leaf or stem rust in this area. Much leaf rust overwintered in northern Texas and central and southern Oklahoma, but very little occurred in northern Oklahoma and southern Kansas. At Manhattan, leaf rust overwintered in the uredinial stage in considerable abundance and is slowly increasing in amount. A few warm days probably will bring out much rust.

Wheat is very rank and there is danger of considerable lodging in many sections. Mildew is abundant in many fields and Septoria leaf blotch is very prevalent. The latter disease seems to have been favored by the cold wet weather and there is already much leaf yellowing on account of its presence.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis) (May 15)

Spring-seeded small grains are making little growth and are quite weedy with Russian thistles. Winter wheat is also at a standstill except on fallow where it now is about 10 inches tall. Some winter wheat strains in the nursery are jointed.

The soil still shows plenty of moisture when worked in corn-seeding operations and there is a good prospect for stands to emerge without further rain.

The second planting in the date-of-seeding experiment with corn was made on May 5. The April 20 seeding has not yet emerged. The first seeding in the date-of-seeding varietal experiment with proso millet was made promptly on May 15.

The maximum temperature for the period from May 1 to 15 was 86°, minimum for the same period, 29°. The precipitation totaled 0.55 of an inch, all in light showers.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon)(May 16)

The weather of the first part of May has been rather cool. Frost occurred on May 5, 6, 12, and 13. The lowest maximum temperature was 55°, recorded on the 11th. May 15 was the first hot day, a maximum of 95° and a minimum of 56° having been recorded.

Precipitation was recorded on 7 days, but the amount was negligible. From May 8 to May 11 there were light intermittant showers driven before a strong northwest wind. In three days 1,040 miles of wind were recorded. A heavy rain at this time undoubtedly would have caused wheat to lodge.

The experimental corn plots, with the exception of the seed-corn treatment test, have been planted this week. The Columbia nursery drill was used to seed all irrigated tests and the dry-land plots which were too small to put in with the corn planter.

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (May 15)

The precipitation so far this month totaled 1.99 inches. There was hardly any run-off. Cool weather has prevailed most of the time.

Winter wheat probably will ripen a week later than last year. Early Blackhull and Nebraska No. 28 are not expected to head for at least a week.

NORTH DAKOTA

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (May 16)

The drought which had prevailed since the first week in April was broken, temporarily at least, by a rain of 0.63 of an inch on May 7 and 8. The rain was sufficient to cause germination of seeds that had failed to germinate because of lack of soil moisture. More rain will be needed soon, however, to produce normal growth of cereal and other crops. Pasture and perennial forage crops are suffering from lack of rain.

The temperatures in May, like those of April, have fluctuated widely, ranging from a maximum of 86 degrees on May 14 to a minimum of 17 degrees the first week of the month. The leaves of oats and barley were slightly affected by the low temperatures, but no injury to spring wheat was noticeable.

Cutworms are doing some damage to forage crops, grains, and garden crops. Plots of safflower seem to be injured more by the worms than any of the cereal grains in the same field.

The seeding of cereal grains is completed with the exception of varietal plots of corn and proso, the proso nursery, the date-of-seeding experiments with flax, and the date-of-seeding experiments with wheat smut. The corn nursery was planted on May 15 and it is planned to plant the corn plots the first of next week.

The spring nursery is in good condition and spring-sown plots have improved since the rain.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (May 15)

All seeding except the proso millet varieties has been completed in the nursery and varietal plots. Growth in the past few days has been very rapid. Because of the cold weather, the wheat varieties and the general test nursery did not emerge for about three weeks, while the later-seeded nursery emerged in ten days or more. Thus, although sown a week earlier, the wheat varietal plots are no farther along than they were last year at this time.

The weather for the first half of May has continued cold and unsettled, except for the past few days. The maximum temperature was 84°, recorded on the 15th, while the minimum was 17°, recorded on the 6th. Precipitation has totaled 0.57 of an inch. The ground is moist at the depth of the seed, but a rain would be very beneficial, especially in preventing soil blowing.

The twenty-third annual meeting of the North Dakota Academy of Science was held at Grand Forks, N. Dak. Some 25 very interesting scientific papers were presented, 8 of which were of direct interest to the agronomist.

MONTANA

Agricultural Experiment Station, Bozeman (Austin Goth) (May 15)

Spring survival of winter-wheat varieties is relatively high at this Station. There has been very little winterkilling throughout the State.

Some injury from blowing has been reported. At Bozeman, Sclerotium root rot caused some killing in the experimental fields and in two fields in the valley. Otherwise winter wheat is in vigorous condition, and if there is sufficient rain a good crop may be expected.

Spring seeding was completed about 10 days ahead of the average seeding date. On account of the lack of moisture, grains are not emerging uniformly.

Dry, hot weather is causing crops to make rapid growth. Nearly all of the seedings at the Station, including flax, have emerged. Nurseries are being trimmed and preparations are being made for irrigation, as there are indications of another dry season. Many farmers have been irrigating pastures, meadows, and alfalfa the past week.

WESTERN BASIN AND COAST AREAS (North to West and South)

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens) (May 15)

Moisture and temperature conditions in March and early April in the Columbia Basin of Oregon were generally favorable for crop growth. Since April 10 there has been no precipitation of any consequence, and for the past two weeks temperatures have been unseasonably high.

Winter wheat, which has been making rapid and vigorous growth, is now showing signs of drought injury. Spring grains are still in good condition but they will need considerably more moisture to insure a good crop. There is much winter wheat in this vicinity that will not be worth harvesting if the dry weather continues two weeks longer.

Fall sown Federation wheat is about 50 per cent headed. Heads will soon be showing the Mariout spring barley.

The total precipitation since September 1, 1930, to date, has been only 7.88 inches. The total precipitation for April was 0.88 of an inch and for the first half of May only 0.15 of an inch.

The highest temperature recorded this month was 91 degrees on the 12th and 13th, and the lowest 31 degrees on the 8th.

University Farm, Davis (Cereal Agronomy, G. A. Wiebe)
[May 15]

The cereal crop in California will be materially reduced on account of the drought. At Davis, the seasonal rainfall is 40 per cent of the normal. It is estimated that the production of grain in the State will be 40 to 45 per cent of the normal. Many fields have been cut for hay or used as pasture. Much of the barley will be of the "shoe peg" type, which makes it of little value for export. Numerous dry north winds have been partly responsible for the reduction in the quality and yield of the crops. Where it has been possible to use irrigation water, good crop returns will be realized.

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CEREAL COURIER

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Bureau of Plant Industry, U. S. Department of Agriculture
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Vol. 23 May 31, 1931 No. 11
Personnel (May 21-31) and General Issue

PERSONNEL ITEMS

Dr. R. M. Caldwell was in Washington on May 29 and 30 to confer with pathologists and others. He was on his way to points in Florida, Georgia, North Carolina, and Tennessee to look over cooperative cereal-disease experiments. Dr. Caldwell will return to his headquarters at Purdue University Agricultural Experiment Station in about one month.

Mr. J. A. Clark left Washington on May 30 to visit field stations in Kansas, Oklahoma, California, Oregon, Washington, Idaho, Utah, Wyoming, and Nebraska for the study of cooperative experiments, especially wheat. He will confer with officials of agricultural experiment stations and others and observe crop conditions in general.

Mr. W. T. Craig was in Washington on May 20 and 21 en route to points in Indiana, Illinois, Kansas, and California to take notes on and harvest wheat hybrids and look over cereal experiments in the breeding nurseries cooperative with the Cornell University Agricultural Experiment Station.

Mr. A. C. Dillman returned to Washington May 29 after completing a trip of two weeks to the U. S. Field Station, San Antonio, Texas, and to the flax-producing area of southeastern Kansas. Mr. Dillman reports that the crop prospects throughout the area he visited were excellent. At San Antonio barley and oats were harvested during the week of May 17 to 23, and flax varieties in field plots were nearly ripe enough to harvest. It was of interest to observe that the Argentine varieties of flax grew as tall as or even slightly taller than Linota, Bison and other varieties commonly grown in the middle Northwest. This shows the adaptation of the Argentine varieties to the longer growing season, comparable to the conditions under which they are grown as a fall seeded crop in the Argentine. In general, Argentine flax grows much shorter as a spring-sown crop than standard varieties grown in our principal flax-producing area. The Indian varieties, on the other hand, were very short (12 to 16 inches high) at San Antonio, which they always are in the Northwest.

Mr. Dillman reports that there apparently is a considerable increased acreage of flax this year in three or four counties of southeastern Kansas. Much improvement in flax production in that area has been made during the past three or four years through the efforts of the Kansas Agricultural Experiment Station and particularly of Mr. I. K. Landon, In Charge of Southeastern Kansas Experiment Fields. This improvement has been brought about through the use of improved varieties, by a heavier rate of seeding in connection with better preparation of the seed bed, a more general practice of early seeding, and more attention to crop rotation including a legume, and to the use of fertilizers.

The Fredonia Linseed Company, Fredonia, Kans., is now doubling the capacity of its linseed mill to 24 presses and more than doubling the storage capacity of its plant. When its new concrete storage tanks are completed it will be able to store approximately 600,000 bushels of flaxseed. The increased interest in flaxseed production in that area has seemed to justify this expansion.

Miss Mary L. Martini left Washington on May 23 for Aberdeen, Idaho, to take notes on cooperative barley experiments.

Dr. K. S. Quisenberry left Washington on May 31 for points in Texas, New Mexico, Oklahoma, Kansas, Nebraska, and Colorado to confer with officials of agricultural experiment stations and field employees of the Division, and to look over cooperative experiments, especially those with wheat.

Dr. H. A. Rodenhiser left Washington on May 27 for Dalhart, Tex., where he will seed the cooperative sorghum-smut inoculation plots.

Mr.T.R.Stanton on May 22 inspected oat and other small-grain plots on the experimental farm of T. W. Wood & Sons, seed growers and merchants, of Richmond, Va. This farm is located about 32 miles southwest of Richmond in Amelia County. The tests included about 50 40th-acre plots of the different cereals. About 15 varieties and strains of fall-sown oats were being grown, and all were in excellent condition, although some contained slight mixtures of wheat and barley. Considerable smut also was noted in some of the strains of Fulghum. An increase plot of 1 1/2 acres of the Lee variety was rogued.

On May 29, Mr. Stanton returned to Washington from a short field trip to Statesville, Raleigh, and Goldsboro, N. C., Hartsville and Columbia, S. C., in the interests of oat investigations. At all those stations oats and other small grains were in excellent condition. There was hardly any loss from winterkilling in winter oats. The different winter oat hybrids that are being grown in the nursery at Statesville appeared very promising but will mature rather late for the Statesville section. The Lee variety was fully headed and will ripen from 10 days to two weeks in advance of Winter Turf. Many of the visiting farmers were favorably impressed with the possibilities of this variety for growing on farms.

Some excellent fields of Fulghum oats, especially of Coker Fulghum No. 4, were seen in the vicinity of Statesville. One farmer in particular claimed that his field would make from 60 to 70 bushels per acre, and would weigh anywhere from 35 to 38 pounds to the bushel.

On the State Hospital Farm at Goldsboro, N. C., 10 varieties and strains of oats were being grown from fall seeding. The various strains of Fulghum were about fully ripe and appeared to be most promising for this section of North Carolina, especially in years when winterkilling is not serious. Eleven varieties and strains of oats also were being grown from spring seeding. Here again the Fulghum strains seemed to be the more vigorous and in advance of all others. The one plot of Brunker was fully headed and attracted the interest of many of the visiting farmers. A plot of the Kanota in the spring-sown series showed anywhere from 5 to 10 per cent of smut.

In the breeding nurseries of the Coker's Pedigreed Seed Co., Hartsville, S. C., many promising new strains of red oats were observed. In all some 14,500 rows, mostly rod rows, were being devoted to the testing of varieties and strains of oats. Many of the hybrid strains from a cross of Navarro on Fulghum, seemed unusually promising, most of them being rather uniform in plant characters and smut resistant. Mr. George J. Wilds, who is in charge of the oat breeding work, is very enthusiastic with regard to the possibilities of some of his new red oat smut-resistant strains. In addition to the oat nurseries a relatively large wheat nursery, and a rye nursery also are being conducted. Some 1,400 selfed lines of rye were being tested this year in which about 5,000 heads had been enclosed in glassine bags. The cereal breeding at Hartsville undoubtedly is among the best and most extensive which is being conducted in the South.

Most of the fields of oats observed along the different routes appeared to be of the Fulghum variety and were fully ripe or already harvested.

There was a good deal of complaint by farmers that smut was present, particularly in the strains of the Fulghum variety. However, farmers at Statesville and Goldsboro, N. C., said that smut was not particularly troublesome in their fields this year. Most of them had treated the seed and consequently had eliminated the losses usually caused by smut infection. Cotton in general seemed to be backward.

MANUSCRIPTS AND PUBLICATIONS

37 A manuscript entitled "Methods of Determining Bound Water for Use with Corn Tissue," by J. D. Sayre, was submitted on May 25 for publication in the Journal of Agricultural Research.

The article entitled "Agricultural Development in Soviet Russia and its Relation to European and American Agricultural Problems," by James G. Dickson, appears in a bulletin of the Illinois Farmers' Institute, Springfield, Ill. Dr. Dickson gave this as an address before the 36th Annual Meeting of the Illinois Farmers' Institute, Decatur, February, 1931.

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CEREAL COURIER

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Vol. 23 June 10, 1931 No. 12
Personnel (June 1-10) and Field Station (May 16-31) Issue

PERSONNEL ITEMS

Mr. F. A. Coffman wrote on May 24 from New Orleans, La., that oats along the route from Georgia are in excellent condition. The yield of fall-sown oats will be far above the average this year. As in other sections of the South, there seems to be considerable interest in oats. Oats infected with smut were observed rather generally. There is more interest than usual in smut-resistant varieties and strains.

At Baton Rouge, La., a semigrazing experiment with fall-sown oats was observed. The oats are cut back at intervals during the winter and then allowed to mature seed in the spring.

On June 1 Mr. Coffman wrote from Greenville, Tex., that oats in Texas are far above the average. Many farmers are expecting yields of from 75 to 100 bushels an acre.

Dr. James A. Faris, for the past 7 years chief pathologist for the Tropical Plant Research Foundation and assistant director of the Sugar Planters Experiment Station, Central Baraguá, Cuba, has been appointed senior pathologist in charge of cereal-smut investigations of this Division.

Dr. Faris is well known for his research on smut fungi and has made numerous noteworthy contributions to this field of pathology. Dr. Faris is a native of Missouri. He graduated from the Missouri State Teachers College in 1913 and from the University of Missouri, with the B. S. degree, in 1916. He holds the A. M. degree from the University of Nebraska and the Ph. D. degree from Columbia University. From 1916 to 1918 he taught botany at Stephens Junior College, Columbia, Mo., and at City Junior College, St. Joseph, Mo. From 1918 to 1920 he was pathologist in this organization and State leader of barberry eradication in Nebraska. In 1920 he was pathologist to the Dominican Government, Santo Domingo. From 1921 to 1924 he was research fellow of the National Research Council and the Brooklyn Botanic Garden, Brooklyn, N. Y. From 1924 until accepting his present appointment, June 1, Dr. Faris, as noted above, was in the service of the Tropical Plant Research Foundation.

Dr. Faris is author or joint author of numerous papers on the diseases of economic crops. He has given special attention to the relation of environment to infection and to the field control of plant diseases. He has published on factors influencing infection in the covered smut of barley and the bunt smuts of wheat, in these studies also demonstrating the presence of physiological races of the smuts. Dr. Faris also is coauthor of reports upon the influence of environmental factors on the infection of sorghums and oats by smuts, and upon the discovery of flower infection in the loose kernel smut of sorghum.

Dr. Faris is leaving Washington on June 13 for the field, planning to spend most of the summer in making a survey of the cereal smut situation and in organizing his research program with cooperating agencies.

Mr. J. W. Jones returned to Washington on June 4 from a trip of three months to points in Missouri, Arkansas, Louisiana, Texas, and California where he conferred with experiment station officials regarding cooperative rice production and improvement.

Mr. J. Foster Martin has been transferred from the Sherman County Branch Station, Moro, Oreg., to the Pendleton Field Station, Pendleton, Oreg., where he will conduct cooperative investigations in connection with the expanded wheat-improvement program in the Pacific Northwest.

Dr. H. A. Rodenhiser left Washington on June 8 to study cooperative cereal-smut nurseries in West Virginia, Ohio, Indiana, Illinois, Missouri, Kansas, Nebraska, Iowa, and Minnesota. Dr. Rodenhiser also will confer with officials of State agricultural experiment stations regarding cereal-disease problems.

Mr. Rudolph D. Setzler has been appointed agent, effective June 10, to assist in rice-disease investigations conducted in cooperation with the Arkansas, Louisiana, and Texas agricultural experiment stations at Fayetteville and Stuttgart, Ark., Crowley, La., and Beaumont, Tex.

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VISITORS

Dr. Ralph U. Cotter, associate pathologist in Barberry Eradication, University Farm, St. Paul, Minn., was a Division visitor on June 8.

Mr. J. H. Simmonds, plant pathologist, Department of Agriculture and Stock, Brisbane, Queensland, Australia, was a visitor in the Division during the period from June 5 to 9.

MANUSCRIPTS AND PUBLICATIONS

38 A manuscript entitled "Susceptibility of Barley to Leaf Rust, *Puccinia anomala,* and to Powdery Mildew, *Erysiphe graminis hordei,*" by E. B. Mains and Mary L. Martini, was submitted on June 6 for publication in the Technical Bulletin series.

Page proof of Farmers' Bulletin No. 1240 entitled "How to Grow Rice in the Sacramento Valley," by Jenkin W. Jones, was read on June 5.

The article entitled "Relative Susceptibility of Varieties of Sorghum to Rust, *Puccinia purpurea,*" by C. O. Johnston and E. B. Mains, appears in Phytopathology 21(5): 525-543, figs. 1-7. May, 1931. (Joint contribution from the Kansas State Agricultural College, Purdue University Agricultural Experiment Station, and the Division of Cereal Crops and Diseases.)

The following nine articles written by members of the scientific staff of the Division of Cereal Crops and Diseases appear in the Yearbook of Agriculture 1931, received June 5:

Pop Corn Selecting for Added Popping Expansion would Pay Large Growers, by Arthur M. Brunson.

Stem-Rust Hazard is Reduced by Using the Proper Fertilizers, by Helen Hart.

Corn More Resistant to Cold When Grown on Soil Rich in Plant Food, by J. R. Holbert.

Goat Grass, a New Wheat-Field Weed, is Growing Troublesome, by C. O. Johnston.

Seed Treatment and Warm Soil Improve Stands of Sorghum, by J. H. Martin.

Insect Resistance in Wheats and Sorghums a Heritable Character, by John H. Parker.

Hereditary Mutations Induced in Plants by the Action of X Rays, by L. J. Stadler.

Oats of Hardier Strains Needed for Fall Sowing in the Southern States, by T. R. Stanton and F. A. Coffman.

Pasturing Winter Wheat in Central Plains Pays if Properly Managed, by A. F. Swanson.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

GREAT PLAINS AREA (South to North)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins) (June 5)

The weather in May was unusually favorable for the growth of small grains. The mean temperature for the month was 66.8° F., which is 3.8° below normal. The precipitation was also below normal, only 2.19 inches having been recorded, a deficiency of 2.07 inches.

Barley matured early in the month and was harvested. The yields will be rather low, as water injured the plots during the early spring. Spring oats were beginning to suffer from lack of moisture when a rain of 0.86 of an inch fell on the 19th. Another rain of 0.70 of an inch on the 30th will supply sufficient moisture to mature the spring-oat crop. Fall oats are being harvested both in the nursery and in field plots. Wheat is a little later but will be harvested in about a week. Stem rust was found on May 20 but has spread rather slowly on account of dry windy weather.

Wheat and oats throughout this section have been considerably injured by the army worm. A few fields west of the Substation were so severely damaged that they were not harvested. After eating the leaves the worms cut off the awns and heads. In the oats they cut off each spikelet, the grain dropping to the ground. Parasites have brought them under control within the last few days, so that the spring oats will not be severely injured.

Reports from the Texas Panhandle indicate that harvest will be rather late this year because of continued cool weather. Prospects are good for a record crop in most parts of the Panhandle.

Dr. H. B. Humphrey, Divison of Cereal Crops and Diseases, and Dr. H. C. Murphy, Iowa Agricultural Experiment Station, were at the Substation on May 29 and 30 to take notes in the crown-rust nursery. Mr. C. O. Johnston, Kansas Agricultural Experiment Station, took notes in the leaf-rust and uniform stem-rust nurseries on the same dates.

Other recent visitors were Mr. F. A. Coffman, Division of Cereal Crops and Diseases, and Dr. P. C. Mangelsdorf, Texas Agricultural Experiment Station.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger) (June 3)

The weather in the last half of May was favorable for the growth of small grain. There were several rains during that period.

The first planting of the varietal plots of sorghum and broomcorn in the date-of-planting experiment was made on May 25 and emerged to stands in 7 days. With one or two exceptions the stands were satisfactory.

A hurried trip was made to Lawton and Stillwater to observe the wheat experiments. Wheat along the route was better than average. In the vicinity of Lawton some barley and oats have been harvested.

The maximum temperature for the last half of May was 95°, recorded on the 16th and 25th; the minimum for the same period was 35°, recorded on the 22nd. The precipitation was 2.63 inches, or a total of 3.44 inches for the month.

KANSAS

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (June 5)

The writer has just returned from a field trip to the wheat-growing sections of Texas, Oklahoma, and Kansas. The rust situation is about as follows:

Abundant inoculum of leaf rust overwintered as far north as Denton, Tex., but temperatures were abnormally low in April and May and only moderate infections occurred. Both leaf and stem rusts are very heavy on wheat and oats at College Station, Tex. Only moderate infections were found at Temple, Tex. At Denton, in north central Texas, leaf rust was moderate to heavy, but only a light infection of stem rust was found on oats and wheat. At Ardmore, Okla., leaf rust was light to moderate on wheat, while only traces of crown and stem rusts of wheat and oats were found. At Stillwater, Okla., a moderate to heavy infection of leaf rust of wheat was found but there were only traces of stem rust. In south central Kansas leaf rust of wheat could be found only in traces in Sedgwick, Sumner, and Harper Counties on May 23. It seems, therefore, that the cool weather of April and May greatly delayed the development of rust and that the wheat and oat crops in the southern Great Plains are likely to escape serious injury this year, in spite of the overwintering of considerable rust in southern and central Texas.

At Denton, Tex., very heavy infections of loose smut of wheat were noted. As high as 35 per cent of the culms in some commercial fields showed infection. On the Denton Substation untreated varieties had heavy infections.

Early varieties of wheat, such as Nebraska No. 28 and Early Blackhull, were injured by spring frosts as far north as Stillwater, Okla.

Septoria leaf spot is prevalent throughout the southern Great Plains area, and in sections infection is very severe. The hard-red-winter wheats again seem to be more heavily infected than the soft-red-winter wheats.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (June 1)

Although precipitation was recorded on nine days in May, the total amount was only 0.21 of an inch. This is the lowest record for May at this Substation. There has been somewhat more wind than usual for May, but evaporation has not been exceptionally high.

Freezing temperatures of 27, 28, and 30 degrees were recorded on May 20, 21, and 22, respectively. On the bench land the temperature on the 21st was 23 degrees.

Small grains are suffering greatly from lack of moisture. Spring grains had not become well enough established before the surface soil dried out. The spring-wheat varieties are standing the drought better than oat and barley varieties, as they were sown earlier. The latter probably will head out before attaining any height.

Winter wheat is heading very rapidly. Early Blackhull began to head on May 18, while Kanred x Prelude did not head until after the freezing weather.

Good stands of corn were obtained on the table land where it was planted in lister furrows. On the bench land, however, where surface planting is practiced the seed was not planted deep enough to germinate. The stand is very poor but is being irrigated in hopes of salvaging at least the breeding block.

Three varieties of proso were sown on May 22. Sorghum varieties will be planted this week.

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (June 1)

The rainfall in May was slightly in excess of 4 inches. There was considerable run-off, however.

Cheyenne and Kanred wheats are just beginning to head. Judging by appearances there will be an average crop and harvest will be a little later than usual. The absence of excessive tillering and height should minimize lodging. Leaf rust is well distributed, but is not abundant enough to be menacing at present.

The Station had a serious fire loss on May 15 when the "J. P" burned. The supplies, nearly all seed reserves, and most of the equipment used in the crop experiments were destroyed. Small grain reserves should be largely replaceable from the current crop, but much of the corn project material cannot be recovered. It is hoped that fireproof facilities will now be provided for this work.

N. V. Kanitkar of Bombay, India, and Dr. Winifred E. Brenchley of the Rothamsted Experimental Station, England, were recent station visitors.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (June 1)

Crops have been making rapid growth in the past week. A gentle rain on May 27, totaling 1.47 inches, has broken for a time a period of alternating cool and hot, dry, windy weather.

Soil blowing caused considerable damage in May. All the oat varieties in plots in series I, and 4 varieties in series II were practically destroyed. Most of the injury was caused by a strong west wind and by a minimum temperature of 23 degrees on May 19. Little or no injury was noted in the wheat and barley plots and wheat nursery.

Temperatures of 90° or above were recorded on two days. Temperatures of 32° or lower were recorded on 10 days. The maximum temperature for May was 93°, recorded on the 25th. The minimum was 23°, recorded on the 19th. Mean maximum and mean minimum temperatures were 67° and 41°, respectively.

The total precipitation for May, recorded in 6 showers, was 2.08 inches, 0.32 of an inch below the normal.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (June 3)

The weather was very unfavorable throughout most of May. The drought that prevailed in April continued almost to the end of May. Low temperatures and high winds caused severe injury to crops. Freezing temperatures the first week of May, especially a temperature of 19° on May 5, killed about 30 per cent of the flax sown April 20 in the date-of-seeding experiment.

The flax nursery experiments were sown April 5 to 15, inclusive. The flax varietal plots were sown May 15. Flax sown May 9 or earlier emerged May 18 with good stands. High winds on the evening of May 18 and all day May 19 caused severe soil blowing, especially where the packer was used to prepare the land for sowing. The flax in the breeding nursery sown with the planter on flax-sick soil on May 6 and that in the classification nursery sown May 8 was practically destroyed by the soil blowing. The remaining seedlings, except those in occasional sheltered locations, were killed by a temperature of 23° on the night of May 19. Many of the rows lost were plant selections made in 1930 and these cannot be replaced because there was just enough seed for a single 5-foot row. Flax sown May 11 was slightly injured. Flax sown May 12 and later had not emerged sufficiently to be injured to any extent.

Injury caused by soil blowing and frost was not so severe in flax sown in plots in the date-of-seeding-and-tillage experiment as it was in the nursery rows, though it is estimated that about half of the seedlings were killed. Only about 20 per cent of the original stand in the April 20 sowing still remains.

Russian thistles are very numerous in plots sown April 20, but are less numerous in later sowings, and there are hardly any in flax sown May 20.

A rainfall of over 1.5 inches on May 26 and 27 made conditions exceptionally favorable for resowing. Flax resown with the planter May 29 is emerging today, only 5 days after sowing. The stands are good. Reseeding of rows sown by hand was completed yesterday. There is still sufficient moisture for germination, though the surface soil is drying out very rapidly and is beginning to blow in some places.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (June 1)

The weather in May was very changeable. The minimum for the month was 17°, recorded the first week. Severe frosts occurred on May 19, 20, 21, and 22, with a minimum of 18° on the 21st. A maximum of 95° was recorded on the 25th. The repeated freezing severely injured oats and barley, and, to some extent, the spring wheat in plots and nursery. Flax varieties in plots were just emerging, and flax in the seed-treatment experiment in the nursery had partially emerged. Nearly all flax above the ground was killed. In both experiments only part of the seed had emerged on account of dry soil conditions. Since the rain on May 27 the remaining seed is now emerging with thin stands.

Rain fell twice in the month; 0.63 of an inch having been recorded on the 7th and 8th, and 0.54 of an inch on the 27th. The total precipitation was 1.21 inches, or about half the normal for the month.

Before the last rain the crop outlook at this Substation probably was the poorest ever observed in May. This was on account of the combined results of drought, soil blowing, freezing, and in some places, cutworm injury. Conditions have improved since the rain. There are fair stands of spring wheat here and in the vicinity of the Substation, except where injury was caused by soil blowing and cutworms. Stands of oats and barley are very thin, many plants having been killed and others weakened by freezing. Corn has emerged rather unevenly since the frosts.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (June 1)

Crop conditions in this section are very favorable. Moisture, although not abundant, is sufficient for rapid growth. The first three weeks of May were unsettled and cold. Two light snowfalls occured in that period; the second, on the 11th, was equivalent to 0.26 of an inch of precipitation. A cold wind and a temperature of 27° nipped the tips of nearly all grain and set everything back fully a week. Favorable weather for the past 10 days, however, enabled rapid recovery from the frost.

The precipitation for the month totaled 1.37 inches. The minimum temperature was 17 degrees, recorded on the 6th; the maximum was 84°, recorded on the 15th.

At the request of Mr. Barrett, the local county agent, an experiment was planned to study the effect of overstrong treatments of formaldehyde on the germination of Ceres wheat. Five replications of eight rod-rows were sown with the kernalsspaced three inches apart in the row. Each replication was divided into two parts. The first part consisted of a check, untreated, one row treated with the standard solution of 1 pint of formaldehyde to 40 gallons of water, one row treated with a 1 to 25 solution, and one row with a 1 to 15 solution. The first part was sown while the grain was still damp. The second part of each replication consisted of four rows receiving the same treatment as the first, but differing in that the seed was dried before sowing.

The results are summarized in the following table. Odds are given for the significance of the differences in the various treatments. The checks were in very close agreement. In both the wet and dry treatments even the standard 1 to 40 treatment caused significant injury to germination. There was no significant difference in the germination of 1 to 40 and the 1 to 25 treatments, either in the wet or dry. In both the wet and dry, the difference between the germination of the 1 to 25 and the 1 to 15 treatments was markedly significant. In comparing the wet and dry treatments to determine the injury to germination as a result of allowing the treated grain to dry before sowing, the differences were not statistically significant, but in each strength the dry had a lower germination than the wet, indicating that had sufficient replications been grown, and the variability caused by frost damage, etc., been reduced, a significant difference in favor of the moist seed would have been evident in the germination counts.

Significance of the differences in germination of Ceres wheat treated with various solutions of formaldehyde

Treatment pt. gals.	Average number of plants 5 replications	Adjacent Pairs Dev. P.E.	Dev./P.E.	Odds
Wet				
check	58.8 ± 0.94			
1 : 40	53.6 ± .94	5.2 ± 1.33	3.9	116:1
1 : 25	50.4 ± .76	3.2 ± 1.21	2.6	12:1
1 : 15	42.8 ± 1.32	7.6 ± 1.52	5.0	1350:1
Dry				
check	58.4 ± 1.42	9.0 ± 2.21	4.1	200:1
1 : 40	49.4 ± 1.69	1.0 ± 1.84	.6	1:1
1 : 25	48.4 ± .74			
1 : 15	38.4 ± 1.01	10.0 ± 1.25	8.0	Very large

Difference between wet and dry

Treatment pt. gals.	Dev.	P.E.	Dev./P.E.	Odds
1 : 40	4.2	± 1.9	2.2	6:1
1 : 25	2.0	± 1.1	1.8	3:1
1 : 15	4.4	± 1.7	2.6	12.1

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Agricultural Experiment Station, Moscow (Wheat Improvement, V. H. Florell) (May 25)

Cereal varieties sown in the fall came through the winter in good condition and are making rapid growth. Stands are especially good in most cases. There are a few exceptions in the wheat classification and foreign wheat nurseries where stands are thin or there is an occasional blank row. This probably was because of poor seed in some cases. The spring varieties in the nurseries seem to have come through the winter in as good condition as the winter varieties.

A number of varieties in the foreign wheat nurseries have begun to head, the first heading having been observed on May 18. Hard Federation and Prelude were the first varieties to head in the wheat classification nursery.

The spring-wheat experiments in plots and nurseries were sown the latter part of April and early in May. Most of the seedlings have emerged with excellent stands. An exception to this was a small lot of hybrids and selections in the nurseries which were spaced for individual plants. Very poor stands were obtained here and it was necessary to resow. The reason for this was that the furrows were opened by hand and the soil quickly became too dry for germination. It seems that in this section it is very important at this time of year to sow with a drill which places the seed in the moist soil with a minimum loss of moisture. However, it is hoped to have better success with the last sowing.

In general commercial wheat fields in this locality are in good condition. The weather, however, is very dry and some fields have been observed to be firing to some extent. It is reported that wheat on cut-over lands is beginning to show signs of lack of moisture.

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, G. A. Mitchell) (May 24)

It appears that crops will be satisfactory in this section. Rain is greatly needed, the total precipitation in May having been but 0.15 of an inch. In some sections of Umatilla County grain is burning on account of lack of moisture. A good crop will be harvested in the vicinity of the Station even though there is no more rain. The nursery and varietal trials are in fine condition. Most of the winter wheats are fully headed and spring barleys are heading.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (June 2)

The weather in May has been favorable for the growth of cereal crops. Small grains have grown rapidly and in general stands have been satisfactory. There was rain at about the right time and irrigation of small grains has been unnecessary.

Rains fell on May 1, 3, 20, and 27, making a total of 2.21 inches for the month. The 10-year average for May is 1.52 inches.

The evaporation for the month was 5.06 inches, compared with 4.50 inches for a 10-year average.

The minimum temperature was 26° F., recorded on the 8th. The maximum temperature was 84°, recorded on the 31st.

Corn was planted at the Station on May 12 and in nearby counties on May 14 and 15. Stands here are very satisfactory. Sorghums were planted on May 19. All but two varieties have excellent stands.

Winter-wheat varieties are now beginning to head and in general have a fine appearance for this time of year.

Mr. Jenkin W. Jones, Division of Cereal Crops and Diseases, was a Station visitor on May 29.

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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and
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of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 June 20, 1931 No. 13
Personnel (June 11-20) and Field Station (June 1-15) Issue

PERSONNEL ITEMS

Mr. C. E. Chambliss left Washington on June 16 to visit points in Pennsylvania, New York, and Ohio in the interests of rice investigations.

Mr. F. A. Coffman returned to Washington on June 13 by way of Knoxville, Tenn., Lexington, Ky., and Morgantown, W. Va. He reported that fall-sown oats at Knoxville were ripening. Spring-sown oats at the other two stations were developing slowly. Prospects for a good crop at all three stations are excellent.

Mr. C. C. Fifield left Washington on June 20 for Chicago, Ill., and Minneapolis, Minn., where he will visit mills and commercial laboratories to investigate milling and baking equipment used for the evaluation of flour quality.

Mr. F. D. Richey left Washington on June 13 for Ames, Iowa, to confer with agricultural experiment station officials regarding cooperative corn investigations. While there he also will confer with Dr. R. A. Fisher of the Rothamsted Experimental Station, England, with reference to statistical methods in the interpretation of experimental data.

Mr. T. R. Stanton left Washington on June 13 for a trip to study cooperative experiments with oats, to make observations on the growing and handling of the crop on the farm, and to confer with agricultural station officials regarding cooperative oat investigations.

Stops will be made at Columbia, Mo., Manhattan and Hays, Kans., Akron and Fort Collins, Colo., Cheyenne, Wyo., North Platte and Lincoln, Nebr., Ames, Iowa, and Urbana, Ill.

Mr. W. J. Sando left Washington on June 13 for points in Missouri, Kansas, Colorado, Utah, California, and Oregon to look over and study cooperative experiments with wheat, including a study of methods employed in certain cytological laboratories.

MANUSCRIPTS AND PUBLICATIONS

39 A manuscript entitled "Studies on the Breaking Strength of Straw of Oat Varieties at Aberdeen, Idaho," by L. L. Davis and T. R. Stanton, was approved on June 15 for submittal to the Journal of the American Society of Agronomy.

An article entitled "Water Requirement, Weeds, Crops. Use of Water by Weeds Given Intensive Study Under Dakota Conditions," by A. C. Dillman, appears in the Dakota Farmer 51(12): 459, 470, illus. June 15, 1931.

June 10, 1931.

B. P. I. Memo 587

MEMORANDUM TO HEADS OF DIVISIONS

Gentlemen:

Occasionally our attention is called to cases where an employee of the Department has indorsed or otherwise praised equipment used by a particular concern or made comments on the quality of products sold by some concern. Frequently comments of this character find their way into newspaper advertising by the manufacturer of the equipment or supplies.

Statements of the character described above are, of course, entirely improper. It is imperative that employees of the Bureau, regardless of the capacity in which they serve, must at all times take an impartial attitude toward equipment and supplies manufactured by commercial concerns. This is particularly true in connection with concerns with which we cooperate and regarding equipment or supplies we may use in our experimental work. The maintenance of cooperative relations depends to a large extent upon our being impartial. Please see that the employees of your Division are instructed that no statements or interviews may be given which might be construed as indorsing any particular firm or its products. Any request of this character should be referred to the Chief of Bureau for consideration.

Very truly yours,

(Signed) Wm. A. Taylor,
Chief of Bureau.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

Coastal Plain Experiment Station, Tifton (Corn Breeding, H. S. Garrison) (June 16)

An unusually long drought for this section of Georgia, beginning May 6, was broken by good rains on June 14 and 15. While corn at this Station was not greatly injured, some corn and other crops in the locality suffered considerably. Some of the earlier strains of corn in our breeding plot are tasseling now.

This has been a very good season for small grains. R. R. Childs, State College of Agriculture, Athens, threshed small grains last week and reported yields of 80 to 100 bushels of oats per acre, and 18 to 35 bushels of wheat per acre.

Oats are considered an important crop in southern Georgia, while wheat is of minor importance.

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (June 10)

Weather conditions in May were about the same as they were in May, 1930. The total precipitation for the month was 3.01 inches. This is 0.55 of an inch less than for the same period last year, and 0.72 of an inch less than for the 21-year average for May.

The absolute maximum temperature was 89° F.; for May, 1930 it was 87°. The absolute minimum was 49°, while for last May it was 57°.

Farmers have nearly completed the seeding of rice, and many fields have been irrigated. Crops have a much better appearance now that the weather is more seasonable. In some cases it has been necessary to flush rice fields that were seeded just prior to the last heavy rain in order to soften the heavy crust that had formed over the seed.

Station operations have progressed nicely. All seeding was completed during the month. The nursery was irrigated and some fields flushed to aid germination. As a whole, stands are good and most plots are free from weeds.

Rain soon after seeding has, in some cases, reduced stands of soybeans because of crusting of the soil.

ARKANSAS

Rice Branch Experiment Station, Stuttgart (Rice Production and Improvement, C. R. Adair) (June 3)

The rice nursery was sown from May 11 to 13. The ground was dry at that time and none of the seed germinated until after it rained on May 19 and 20. The ground was badly crusted by May 25 and it was necessary to flush the land, Only a portion of the plants emerged before irrigating so the length of time to emergence varied widely. The nursery was flushed a second time on June 2. At present the rice is looking very well and the stands are good in most cases.

Red rice was sown in pots May 20. Supreme Blue Rose was sown as a check. The seeds sown on the surface have sprouted.

The weather this spring has been very dry, the rainfall having been below normal for the past two months.

(June 13)

The nursery has a fine appearance. It has been flooded three times since it was sown, and it is intended to submerge it again June 15.

IOWA

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy) (June 10)

On a recent trip the writer found that despite the relatively small amount of crown rust in the southern States this year, there is little doubt that this disease is the greatest limiting factor for successful oat production in the South. Satisfactory notes were obtained on the nurseries located at Gainesville, Fla., Calhoun, La., and Denton, Tex. If sufficient rust develops at the remaining stations, arrangements have been made to have material collected and sent to Ames, in order that the estimated rust percentages may be obtained. Collections of rust were made and field notes were obtained throughout the entire trip.

The nursery here is in excellent condition. The weather for the past month has been favorable for the growth of small grains. Winter wheat is in full head and early varieties of barley and oats are now heading. There is good initial artificial infection of crown rust on the susceptible check rows, and there should be sufficient rust for satisfactory readings during the period from June 25 to July 4.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus) (June 15)

The weather in May was exceptionally dry, only 1.18 inches of rainfall having been recorded. Cool temperatures and lack of rain retarded growth of all cereal crops. The period from June 1 to 15 was characterized by relatively high temperatures and abundant rainfall. The precipitation in that period totaled 3.04 inches.

Winter wheat headed very short. Spring wheat and other cereals also are short and are now beginning to head.

Stem rust, resulting from hypodermic inoculation of the plants with a water suspension of uredospores, was first observed in the rust nursery on June 2. Leaf rust also has been produced in the nursery by the same method.

GREAT PLAINS AREA (South to North)

TEXAS

Texas Agricultural Substation No. 4, Beaumont (Rice Production and Improvement, H. M. Beachell) (June 9)

All rice in field plots and nursery had emerged by June 2.

The superintendent, R. N. Wyche, and the writer drove to College Station yesterday. Various phases of the rice improvement work were discussed with station officials there.

United States Dry-Land Field Station, Dalhart (Grain Sorghum and Broomcorn Investigations) (B. F. Barnes) [June 15]

Yields of grain sorghum varieties in date-varietal experiments, grown at Dalhart, Tex., 1930

Variety	C. I. No.	Yield (Bu. per acre)				
		Cropped land				Fallow
		May 15	June 1	June 15	Average of 3 dates	
Milo						
Dwarf Yellow	332	32.1	45.8	38.0	38.6	63.4
Double Dwarf	868	37.3	44.4	36.0	39.2	54.0
Fargo Straightneck	809	36.9	50.9	42.2	43.3	57.6
Beaver	871	25.9	37.1	29.9	31.0	45.5
Smith's milo x kafir	808	25.7	40.4	27.7	31.3	49.6
Kafir						
Dwarf		27.5	37.7	36.0	33.7	52.7
Sunrise	472	19.5	33.3	37.3	26.7	45.5
Reed	628	25.3	36.4	29.5	30.4	50.5
Pink	432	18.1	19.9	27.5	21.8	48.2
Wonder	872	18.1	24.4	32.4	25.0	44.6
Texas Blackhull	865	20.3	26.3	32.4	26.3	50.0
Bishop	814	17.7	19.0	6.1	14.3	36.2
Early Red	866	21.0	28.8	23.5	24.4	43.3
Feterita						
Standard	182	10.5	18.3	30.6	19.8	42.0
Dwarf	810	15.2	20.1	29.7	21.7	41.1
Spur	623	18.3	21.9	27.2	22.5	48.2
Hybrid Dwarf No. 6		13.2	18.5	25.0	18.9	34.8
Miscellaneous						
Dwarf hegari	620	13.2	22.8	37.5	24.5	51.4
Premo	873	22.1	26.2	29.7	26.0	56.3
Chiltex	874	21.4	27.5	31.3	26.7	52.7

KANSAS

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (June 5)

The rust situation in the southern Great Plains is interesting. The stage was all set for a very heavy infection of leaf rust of wheat, but temperatures in April and May remained so low that only moderate infections have developed to date. Stem rust infection of both oats and wheat is heavy in southern Texas. A moderate infection of both crops is present as far north as Temple, Tex. At Denton stem rust is very light. Only traces are present in Oklahoma. The first stem rust on wheat and oats was observed here yesterday. That is sufficiently early for considerable rust to develop in this area if the present dry weather should be broken. If no rains occur within the next week, it is unlikely that there will be much stem rust in Oklahoma and Kansas.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis) (June 15)

Cool, cloudy weather with frequent light showers prevailed during the first two weeks of June. This was favorable for the growth of small grains. Early strains of oats, barley, and winter wheat are in full head and promise good yields even on the cornland preparation.

Winter wheat seeded on fallow August 15 shows severe injury. This injury is noticeable in the September 1 seeding, but nowhere else except on some of the stubbled-in plots of winter wheat on the rotation block. This injury has all the earmarks of that caused by drought.

Many reports are being received concerning injury to winter wheat, especially in the vicinity of Burdett and Haxtum, northeast of the Station. The freeze of April 20 is blamed for the damage. A minimum of 19° was recorded here on that date. The writer, J. F. Brandon, and Dr. D. W. Robertson of Fort Collins visited the Haxtum area on June 10. Winter wheat between the Station and Haxtum in general had a good appearance. There was an occasional damaged field. There were some badly damaged fields on sandy soils eight miles north of Haxtum. The concensus of opinion was that the injury was caused by frost and unusually dry weather.

The precipitation in the first half of June totaled 0.92 of an inch. The maximum temperature was 90°, recorded on June 3; the minimum was 45°, recorded on June 5.

Recent Station visitors included Drs. C. E. Leighty and D. W. Robertson, and A. L. Hallsted.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (June 16)

Conditions at the Substation have greatly improved since the first of the month. On June 4, 2.11 inches of rain were recorded at the table-land field, and 0.40 of an inch fell the next day. There was also another good rain of 1.16 inches on the 10th. The rains fell gently so that there was no serious washing. A number of strains of winter wheat in the nursery showed a tendency to lodge, but are straightening up again. The spring grain nursery and varieties are in much better condition than it was thought they would be.

The bench-land corn experiments which were irrigated up on June 1 and 2 now show fair stands and should give reliable yield data. However, the cooperative experiment at Sutherland was a failure, as there was enough moisture to germinate the seed, but not enough to enable it to become established. The dry-land corn is in fine shape and has been cultivated since the last rain.

Sorghum varieties were planted June 3 and emerged June 11. All varieties but Modoc have good stands. The prosos emerged June 2 with fairly good stands.

The first pustule of leaf rust was found on the 13th. No stem rust has yet been observed. The weather of the last few days has been favorable for rust.

Dr. C. E. Leighty and A. L. Hallstead visited the Substation on June 8 and 9. Dr. Leighty naturally was greatly interested in the wheat work in the cereal project.

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (June 15)

So far as moisture is concerned abundant rainfall gives assurance of good crops of small grains. As a result of the rains there is considerable leaf rust of wheat. Doubtless yields of the more susceptible varieties will be materially reduced. Stem rust has not been observed to date. There is no lodging in any of the plots.

Bunt is receiving considerable attention. Satisfactory infections were secured this year in all the special bunt nurseries, consisting of some 2,700 head rows and about 900 rod rows. Counts have just been completed on the varietal series, a few of the more important of which are presented in the following table:

Comparative bunt infection of selected wheat varieties grown at Lincoln, Nebr., 1931

Variety	C.I.No.	Nebraska No.	Heads bunted (per cent)
Kharkof	1442	--	52.0
Kharkof (Hays No.2)	6682	--	54.5
Nebraska No. 60	6250	60	11.5
Cheyenne	8885	1050	29.0
Turkey Selection	10015	1062	2.1
" "	10016	1069	2.2
Kanred x Prelude	8886	--	29.5
Tenmarq	6936	--	26.5
Kanred	5146	--	24.7
Blackhull	6251	--	26.0
Oro	8220	--	10.0
Minturki	6155	--	3.5
Karmont	6700	--	51.0
Early Blackhull	8856	--	49.0
Minturki x Beloglina-Buffum	8033	--	9.0
Minhardi x Minturki	8034	--	5.0

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden) (June 11)

In general crops in this section have a better appearance than they have had in several years. There has been ample rainfall, backed up by a good carry over from last fall. Pastures are in excellent condition. Small grains have a good color and are making satisfactory growth. Corn stands are excellent.

In April soil blowing caused some injury to small grains. On account of the low temperatures in May there was some injury to flax, oats, and barley. At least half of the flax had to be resown, some of it the second time.

This year crops on the Station have fared somewhat better in the fight against the elements than crops on adjoining farms. There was no injury from soil blowing, while small grains in general were far enough advanced when the freezes occurred that, aside from a temporary setback, they were not severely injured. A great difference was noted in the frost resistance of different varieties of wheat and barley. Hope, H-44, Marquillo, and Reward froze back badly. Many of the Hope and H-44 plants were killed outright. On the other hand, Reliance, Double Cross, Minn. 2303, Power, and Mindum showed slight injury. Of the barleys, Vaughn, X-244, Nepal, and three of the hybrid hull-less selections were badly injured, while White Smyrna was only slightly injured.

Winter wheat in the nursery came through the winter with good stands, but some killing occurred in the field plots where the date of seeding was later. The furrowed plots showed a much higher survival than the level seedings.

The earlier varieties of winter wheat are fully headed, spring wheats are beginning to joint, and early varieties of barley are in the boot stage.

Primary infection of leaf rust made its appearance on Kota wheat yesterday. No stem rust has been observed to date, but an extremely high south wind on the night of June 8 may have stirred up some stem-rust spores which should have favorable conditions for germination in our recent heavy dews.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(June 16)

The weather in the first half of June was favorable for crop growth. Days were warm. The maximum temperatures ranged from 62 to 84 degrees. Fortunately there were no strong winds to cause rapid loss of the rather limited supply of moisture. A rain would have done much good, even though crops did not suffer noticeably from drought. Three light showers, totaling 0.41 of an inch, were recorded.

The surviving material in the winter wheat nursery is doing well. Seventeen varieties are in the first-heading stage and several others are nearly as early.

Vaughn barley in plots was in the first heading stage on June 15.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.,) (June 16)

The weather in the first half of June was somewhat more favorable than it was earlier in the season. Temperatures and wind velocities were moderate. Moisture conditions were favorable for germination.

Flax sown May 29 in the date-and-rate-of-seeding-and-tillage experiment emerged about June 4 with good stands. Flax sown June 10 emerged today. Stands of flax reseeded in nursery rows are much more uniform and satisfactory than stands in earlier seedings which were somewhat injured by wind and frost. Stands of flax in varietal plots are very poor, partly on account of poor germination and partly on account of soil blowing and cutworm injury.

Some wilt has appeared in the flax-sick soil nursery, though the number of wilted plants is still very small.

Other species of Linum, including L. perenne, L. Lewisii, L. alpinum, L. austriacum, L. asiaticum and L. rigidum are in full bloom.

A temperature of 96°, the highest this season, was recorded today.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (June 15)

The drought of April and May still prevails. So far this month about 0.40 of an inch of precipitation has been recorded. The southern and eastern sections of the State have had more rain, while the northwestern section reports conditions as being extremely dry.

Crops are rather poor, many fields being uneven in stand because of injury from frost, wind, and cutworms. All crops are in need of rain. The hay and pasture situation is the worst in many years.

Corn at the Substation and vicinity is in good condition as it had not yet emerged at the time of the severe freezing in May. Winter rye is fully headed and very light. Winter wheat is beginning to head. Spring wheats in plots and nursery are in fairly good condition, while oats, barley, and flax are uneven in stand.

Messrs. H. L. Westover and C. R. Enlow, Division of Forage Crops and Diseases, are visiting the Substation today.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (June 15)

What is hoped will be the last frost of spring occurred on June 7. A temperature of 29° was recorded on that date. The last spring frost generally occurs about June 10.

On June 11 there was a slow rain, totaling 0.35 of an inch, which greatly benefited the wheat. That was the only precipitation recorded so far this month. Temperatures have been favorable and growth in the nursery and varietal plots is satisfactory. The nursery has been cultivated and hoed once. Weeds are not growing rapidly on account of lack of moisture.

MONTANA

Montana Agricultural Experiment Station, Bozeman (Austin Goth) (June 9)

About 2.50 inches of precipitation were recorded in the past 15-day period.

Prospects for good crops are favorable. Summer fallow is in excellent condition. Alfalfa, clover and other crops are making rapid growth. Alfalfa will be ready to cut in a week or ten days.

Fall-plowed land that had been disked and leveled this spring was in such ideal condition that it was thought safe to sow a red clover variety and a seed-method-study test even at this late date. The seed bed was cultipacked this morning before drilling was started. Considerable use has been made of the cultipacker in the valley this spring. Red clover seed production may prove profitable here, as an average of175 pounds of seed per acre was produced last year in comparative trials.

Crop conditions in the State have greatly improved within the past ten days. Some winter wheat has been killed by soil blowing, and some by burning.

Myron S. Hazen, American Agricultural Chemical Company, and J. W. Haw and Irving J. Courtice, Agricultural Development Department of the Northern Pacific Railroad, were Station visitors on Sunday. They were particularly interested in the fertilizer tests. Data were presented showing that significant increases in yield are secured in response to nitrogen-bearing fertilizer, while other fertilizers produce but little measurable effect.

WESTERN BASIN AND COAST AREAS (North to West and South)

CALIFORNIA

Biggs Rice Field Station, Biggs, (Rice Agronomy, L. L. Davis) (June 4)

Rice has a better appearance every day. Stands are almost perfect except for a few low plots on the west side which were thinned out by scum. The nursery and varietal plots also have a fine appearance but are a little ragged on account of weeds. The increase field, consisting of 8-1/2 acres, is in good condition.

The weather has been favorable. There have been some high winds, especially from May 18 to 21. A temperature of 100° was recorded on May 30 and 31, but it has been very pleasant so far this month.

Recent Station visitors included J. A. Clark, B. B. Bayles, and G. A. Wiebe.

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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and
Diseases, Bureau of Plant Industry, U. S. Department
of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 July 10, 1931 No. 15
Personnel (July 1-10) and Field Station (June 16-30) Issue.

NOTICE

The issue of the Cereal Courier of June 30 (Vol. 23, No. 14) was omitted.

PERSONNEL ITEMS

Prof. Henry L. Bolley was appointed agent, effective July 1, to assist in cereal-disease research, particularly research in flax-wilt diseases, conducted by this Division in cooperation with the North Dakota Agricultural Experiment Station, at Fargo, N. Dak.

Mr. C. E. Chambliss returned to Washington on June 26 from a 10-day trip to points in Pennsylvania, New York, and Ohio in the interests of cooperative rice investigations.

Mr. F. A. Coffman left Washington on July 7 for a trip in the interests of cooperative oat investigations. He will visit stations and farms in Iowa, Ohio, Illinois, Indiana, Wisconsin, Minnesota, North Dakota, South Dakota, Montana, Idaho, Wyoming, Utah, Colorado, Nebraska, Kansas, and Missouri.

Mr. A. C. Dillman left Washington on June 28 on a trip to St. Paul, Minn., Fargo and Mandan, N. Dak., and Bozeman, Mont., where he will take notes on the cooperative flax experiments and on the flax classification nurseries. He will be in the field until the end of September.

Dr. Charlotte Elliott left Washington on June 27 for Garden City and Manhattan, Kans., to confer with agricultural experiment station officials and to take notes on cooperative sorghum-blight experiments.

Mr. O. S. Fisher left Washington on July 10 for an extensive trip in the interests of cooperative extension agronomy. He will travel in Illinois, Colorado, Utah, Idaho, Washington, North Dakota, Minnesota, and Wisconsin. At Akron, Colo., Mr. Fisher will attend the Joint Extension and Experiment Station Dry-Land Conference from July 16 to 18, and at Logan, Utah, he will attend the Western Extension Conference from July 21 to 24.

Dr. Charles S. Holton was appointed agent, effective July 1, to assist in the smut investigations conducted by this Division in cooperation with the Washington Agricultural Experiment Station, at Pullman, Wash.

Dr. H. B. Humphrey returned to Washington on July 2 from a 6-week trip in the South and West in the interests of cooperative cereal-rust research.

Mr. R. W. Leukel left Washington on June 25 to spend about three months in the study of cooperative smut nurseries in Illinois, Iowa, Wisconsin, Minnesota, South Dakota, and Montana. He also will confer with officials of agricultural experiment stations regarding future cereal-disease problems.

Mr. S. C. Salmon was appointed, effective July 1, principal agronomist in charge of wheat investigations of this Division. Mr. Salmon, a graduate of South Dakota State College, was first in the service of this Division from 1907 to 1913, when he was in charge of cooperative cereal studies at the Belle Fourche Field Station, Newell, S. Dak. From 1913 until June 30 of this year Mr. Salmon was professor of farm crops at the Kansas State Agricultural College. His own studies and activities have covered a wide variety of interests. He has given particular attention to the relationship of physiological factors to field problems. He brings to his new work a background of broad experience, a comprehensive knowledge of problems, and a recognized ability in his field.

Mr. Salmon is spending the summer months in visiting cooperative field experiments with wheat in Nebraska, Minnesota, North Dakota, South Dakota, Montana, Washington, Idaho, Oregon, Utah, Wyoming, Colorado, and Kansas, reporting in Washington some time in early September.

East

Mr. T. R. Stanton reported from/Lansing, Mich., on July 4 that he was returning to Ames, Iowa, after making observations on oat experiments in Missouri, Kansas, Colorado, Nebraska, Iowa, Illinois, Indiana, and Michigan.

At Columbia, Mo., oats and other small grains were in excellent condition. Early varieties, such as Brunker and Columbia, were beginning to ripen. The Columbia oat apparently is of considerable promice in Missouri. Approximately 3,000 bushels of seed were distributed for sowing on farms in the State last spring. Fulghum or Kanota is now the leading variety in the State. It is believed that over half the acreage is now sown to Fulghum or its strains.

At Manhattan and Hays, Kans., oats were in good condition, there being little or no rust of any kind. Several of the various smut-resistant selections from hybrids were of some promise at Manhattan.

At Akron, Colo., in spite of a very low spring rainfall, the different varieties and strains of oats in plots and nursery rows were in fair condition. Brunker and Columbia were ripening and should lead in acre yield in 1931. Brunker is becoming popular with farmers in northeastern Colorado. About 1,800 bushels were distributed from one farm alone near Burdette, Colo., last spring. According to Mr. Simpson, County Agent at Greeley, Colo., Brunker is being tried on many farms in Weld County, where he thinks it is of considerable promise for the dry lands.

At Fort Collins, Colo., and Cheyenne, Wyo., early oats were barely starting to head. The new crown-rust resistant Victoria oat was showing a distinct prostrate habit of growth in the uniform stem-rust nursery.

A good crop of oats and other small grains is in prospect at the North Platte (Nebr.) Substation. The oat varieties and strains appeared especially well this year. Visiting farmers were manifesting considerable interest in some of the newer varieties such as Markton, Brunker, and Carleton. At Lincoln early oats were about ready for harvest and a good crop was expected.

Of the various strains of early red oats that are being grown in field plots the unnamed Burt selection, C. I. No. 2491, appeared unusually promising under the conditions at Lincoln, although it may be too early for the average season.

At Ames, most of the oats were still rather green. However, the intensely hot weather was injuring them to some extent. In a preliminary study of about 100 newly introduced varieties grown for the first time at Ames, two showed high resistance to crown rust, thus making available varieties other than Victoria for use in breeding for resistance to crown rust.

At Urbana, Ill., the varietal plots and some of the oats in nursery rows had been almost completely lodged by a severe rain and wind storm. Oats were much better at LaFayette, Ind., than at Urbana. Dr. Cutler is rather enthusiastic about some of the smut-resistant lines from crosses of Markton on Victory and Idamine. Here at East Lansing, Mich., these selections likewise were very promising. In fact, Markton oats have been doing very well on the lighter soils of Michigan, and the variety probably will be distributed for growing on farms.

Mr. J. W. Taylor spent July 1 and 2 in Fisherville, Va., where he harvested the experimental cereal nursery.

MANUSCRIPTS AND PUBLICATIONS

40 A manuscript entitled "Susceptibility and Resistance of Berberis and Related Genera to *Puccinia graminis* Pers.," by Moses N. Levine and Ralph U. Cotter, was submitted on June 30 for publication in the Technical Bulletin series.

41 A manuscript entitled "Studies on Virus Mixtures," by H. H. McKinney, was approved on July 2 for submittal to a French journal.

Page proof of Farmers' Bulletin No. 885 entitled "Wheat Growing in the Southern States," by Clyde E. Leighty, was read on July 7.

The article entitled "Inheritance of Smut Resistance and Juiciness of Stalk in the Sorghum Cross, Red Amber x Feterita," by A. F. Swanson and J. H. Parker, appears in The Journal of Heredity 22(2): 51-56, figs. 7-9. February, 1931. (Joint contribution from the Division of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.) (Received in June.)

The article entitled "*Cercosporella herpotrichoides* Fron, Cause of the Columbia Basin Footrot of Winter Wheat," by Roderick Sprague, appears in Science 74(1906): 51-53. July 10, 1931. (Cooperative investigations between the Division of Cereal Crops and Diseases and the Washington and Oregon agricultural experiment stations.)

Omission

Mention of the article "Drought in 1930 Showed Some Strains of Corn to be Drought Resistant," by Merle T. Jenkins and Frederick D. Richey, was omitted from the Cereal Courier of June 10, 1931, v. 23, No. 12, p. 135. This article appears in the Yearbook of Agriculture 1931, p. 198-200.

B.P.I. Memo 589 June 10, 1931.

MEMORANDUM FOR HEADS OF DIVISIONS

Gentlemen:

Please note the following memorandum, dated June 9, 1931, from Mr. M. S. Eisenhower, Director of Information, in regard to the importance of furnishing the Office of Information with copies of all addresses and articles for outside publication:

> "If the Department is to get the best distribution of its information, it is necessary that each bureau and office make special and continuous efforts to supply the Office of Information with copies of all addresses and all articles for outside publication. This applies to every person in the Department who delivers addresses or writes articles in his capacity as an employee of the Department.
>
> Copies of such addresses and articles should be supplied to the Office of Information as far as possible in advance of the date of delivery or publication. Whenever it can be done the date and hour of the address or the approximate date of publication should be given.
>
> Many offices have been regularly observing this requirement of the administrative regulations, but some have not. I wish that you would impress upon all the employees of your Bureau the importance of observing it.
>
> Matters worth discussion before a meeting or in a single publication, even a technical one, frequently deserve much wider distribution."

Copies of addresses or articles for outside publication prepared by members of your staff should be furnished this office for forwarding to the Office of Information, at the time for approval for presentation or publication is requested, if possible.

Very truly yours,

(Signed) Wm. A. Taylor,

Wm. A. Taylor,
Chief of Bureau.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (July 3)

The weather in June was nearer normal than it was in June, 1930. The total precipitation for the month was 1.77 inches. In June, 1930, it was only 0.63 of an inch. The 21-year average is 4.34 inches. Temperatures were about normal. The absolute maximum was 95° F., the absolute minimum, 58°.

As a whole the commercial rice crop is in excellent condition. At no time during the month did fields appear unhealthy, as was true last year during the early part of June. This perhaps was because the prevailing wind direction was from the south. Last year there were many days with strong, dry, north winds.

So far this season very little leaf spot disease has been noted, except in a few isolated fields. It is to be hoped that the vigorous condition of the rice plants will enable them to resist this disease, or that weather conditions will not be favorable for its development.

The light rainfall is causing considerable anxiety throughout the rice area. In some sections irrigation plants have closed down because of the quantity of salt contained in the streams from which they obtain their supply. Other streams are rapidly becoming contaminated with salt water from the Gulf. Rains occur almost daily but are rather scattered, and not sufficient to swell the streams. Unless rains occur within the next few days nearly all irrigation plants that obtain their water from streams will have to cease operations.

Work on the Station has been satisfactory. One good rain on June 22, followed by several showers, caused favorable conditions for all cultivated crops.

All rice plots were irrigated during the month. Cotton and soybeans were cultivated, and levees cleaned.

Director C. T. Dowell was a visitor on June 16 and C. A. Krug, Campinas, Sao Paulo, Brazil, on June 24.

Agricultural Experiment Station, Baton Rouge (Corn Breeding, H. F. Stoneberg) (July 3)

The last 10 days of June and the first half of July is the season for hand pollinating and is the busiest time of the year in the corn-breeding work.

Detasseling in the crossing plots, where selfed lines are being crossed with the parent varieties, is almost completed and hand pollinating is in progress in the selfing and other crossing plots.

The weather since planting has been somewhat drier than in a normal year. In some plots the stand is irregular and the plants vary in height because of insufficient moisture for immediate germination after planting.

The following table shows the rainfall and the amount below normal for the months of the growing season up to the present:

	Precipitation (In.)	Below normal (In.)
March	4.22	-0.52
April	3.31	-1.45
May	3.60	-1.63
June	1.65	-3.12

Corn has suffered somewhat, especially during the latter part of June. There were a few light showers, but most of the moisture has been lost through evaporation.

The weather has been hot since June 12. The maximum temperatures ranged from 89° to 96°.

Mr. Carlos Arnaldo Krug, Department of Genetics, Instituto Agronomico Do Estado, Campinas, Sao Paulo, Brazil, who is spending a week at the Louisiana State University, visited the corn breeding experiments on July 1.

TENNESSEE

Agricultural Experiment Station, Knoxville (Corn Breeding, L. S. Mayer) (June 26)

The experiment field of breeding strains of corn and the yield test of crosses within selfed lines were planted May 15. Though May was cold and rainy the germination was good and the stand uniform. After the corn was up there was much trouble with root maggots and lice, which have taken their toll.

The weather in June was abnormally hot and dry and the precipitation far below normal. Showers on the 13th, 14th, and 15th, the first since May 20, came at a much needed time. Since then there have been parching temperatures. Unless all signs fail there is likely to be a repetition of last year's conditions here and in many other parts of the State.

IOWA

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy) (June 30)

There has been a severe heat wave during the past ten days, with the maximum temperature well above 90° and often above 100°. The little moisture reserve and the unusually high temperatures have caused the leaves of small grains to turn yellow and dry. All leaf rust readings must be secured immediately.

There is an average infection of 80 per cent of crown rust and 60 per cent of stem rust on the Iowar checks in the crown rust nursery. This epiphytotic was initiated by using a hypodermic syringe when the plants were in the stage from seedling to boot. Under field conditions Iowar is showing 10 per cent of crown rust and a trace of stem rust.

Early varieties of oats, wheat, and barley are now ripening. Should this heat wave continue the yields of small grains probably will be materially reduced.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding, E. R. Ausemus) (July 1)

The weather in the latter part of June was very unfavorable for small grains. Temperatures of 90° or over were recorded in the week of June 23 to 30. The maximum temperature was 102°, on June 28. The precipitation recorded in the latter half of the month was 1.37 inches, making a total of 4.41 inches for the entire month.

Small grains in this section were severely burned during the period of high temperatures.

Stem and leaf rust infections are not developing during the exceptionally warm period. The initial infection caused by artificial inoculation has developed but there is very little secondary infection on account of lack of morning dews and the recent very high temperatures.

Recent Station visitors included Dr. H. B. Humphrey, Dr. J. A. Faris, Dr. H. A. Rodenhiser, and A. C. Dillman, of the Division of Cereal Crops and Diseases, and Dr. O. S. Aamodt, University of Alberta, Edmonton, Alberta.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger) (June 28)

Since the middle of June there has been no rain at this Station. Before that time rains occurred at short intervals. The contrast in the condition of the sorghums has been very noticeable as they are now making rapid growth. Thinning to stands is being done. The last seeding of the date-varietal experiment was completed on June 22 and the seedlings emerged on the 27th.

The precipitation for June was 2.68 inches, all of which was recorded in the first half of the month. The maximum temperature was 100°, on the 27th, the minimum, 59°, on the 8th.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens) (June 28)

Some wheat in this area was severely injured by hail in June, but damage at the Station was negligible. The wheat plots and nursery have been cut, and threshing will begin soon.

Mr. C. O. Johnston took leaf-rust readings on the nursery and varietal plots on June 13. Other Station visitors were Mr. J. A. Clark and Dr. K. S. Quisenberry on June 5. Dr. Quisenberry also spent the week of June 14 to 21 at the Station.

KANSAS

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows) (June 26)

The take-all foot-rot was more abundant this year than ever before. Many fields only slightly affected in previous years were badly diseased this season. County agents and farmers from the north central to the south central parts of Kansas have become much interested in take-all. This also was true in north central Oklahoma. There has been no difficulty in finding fields for next year's varietal tests, and farmers who are willing to aid in these tests.

The abundance of take-all this year afforded ample opportunity to study the effect of crop rotation on its virulence. It was well demonstrated that wheat should be kept out of fields at least three years if the farmer desired to raise two successive wheat crops free of disease. Farmers who practice rotation seldom are troubled with take-all. This not only applies to individual farmers, but to communities also.

Central and western Kansas are alike in that farmers raise wheat continuously. However, central Kansas has take-all and western Kansas has not. The difference is mostly one of precipitation. This checks with greenhouse tests on the effect of moisture on take-all. Eastern Kansas has a high moisture but is not greatly troubled with take-all. However, rotation is practiced to a considerable extent in that section.

A certain peculiarity of take-all was noticed this year which also was noted in other years. The disease may suddenly disappear in fields which before have been very badly infested. This disappearance may occur in fields continuously cropped to wheat. In other continuously cropped fields it may as suddenly appear.

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (June 23)

The weather for the past two weeks has been favorable for the ripening of winter wheat in central and southern Kansas. Harvest is in full swing in the southern counties. Temperatures over much of the hard-winter-wheat area have been ideal for growth of high quality wheat. The new crop from southwestern Oklahoma, 240 cars of which reached the Kansas City market last week, generally has been high in test weight and protein content.

At Manhattan a heavy rainstorm on June 11 caused severe lodging in the wheats in nursery and field plots.

Leaf-rust infection is extremely heavy, and considerable stem rust is now developing on both wheat and oats. However, most varieties of both crops are too near maturity to be severely injured. Black chaff has appeared only on Hope and hybrid selections involving Hope. A small amount of scab has been noted in commercial fields in Dickinson County and in experimental plots at Hays. Crown rust of oats is light to moderate in the vicinity of Manhattan, and there is hardly any at Hays.

Station visitors in June included S. L. Macindoe of New South Wales, T. R. Stanton, W. J. Sando, Dr. H. A. Rodenhiser, Dr. J. A. Faris, Dr. K. S. Quisenberry, and N. E. Jodon.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (June 29)

The hot wind which has blown continuously for 10 days and the prevailing dry conditions are bringing about an early harvest. The wheat varieties, Kanred x Prelude, Early Blackhull, and Turkey selection C. I. No. 10016, were cut on June 27. A number of early nursery selections also were cut. The Fourth is the usual time to begin harvest in this section.

The maximum temperature for the past 8 days has been between 90° and 99°. It has reached 99° the past two days. Evaporation is over a third of an inch daily. There has been only a trace of precipitation since the middle of the month. Corn is at the point where it seriously needs moisture.

The attendance at the Field Day held on June 25 was very small, but considerable interest was shown by those present. Mr. T. R. Stanton visited the Substation on that day. He stated that he had never seen better oats here. All of the spring grains look remarkably well, considering the season.

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (July 1)

The past ten days have been characterized by high temperatures, 100° or more having been recorded on five days. There was no precipitation during that period. Maturity of all small grains has been hastened and, as a result, the spread between early and late varieties narrowed considerably. Harvest is now in progress. Yields are expected to be average.

The Hessian fly is in evidence again this year. The following table, may be of interest:

Comparative susceptibility of certain spring-wheat varieties to the Hessian fly at Lincoln, Nebr., June, 1931. (Special nursery).

Variety	C. I. No.	Infestation Plants (Per cent)	Infestation Culms (Per cent)
Peliss	1584	0	0
Arnautka	1494	4	3
Hope	8178	36	18
Marquis	3641	25	13
Ceres	6900	40	23
Kearney (Java)	--	0	0
Progress	6902	8	4
Garnet	8181	16	12
Kota x Marquis 1656.48	10014	20	10
Marquis x Kota 1656.84	8004	28	19

Field Day was held here on June 23. An unusually small group of about 100 attended.

Recent Station visitors included Messrs. T. R. Stanton, S. C. Salmon, C. O. Johnston, Levine, Faris, Rodenhiser, and Quisenberry.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden) (June 29)

Prospects for a bumper crop of small grains have been good until quite recently. However, for the past three days a Nebraska hot wind on its way from western Nebraska to North Dakota has ruined the prospects. The mercury stood at 111 degrees F., yesterday, 110° the day before, and indications are that it will be fully as hot today. Grain fields are turning white and giving off an aroma of new-mown hay, and unless relief comes very soon there will not be much left to harvest. There have been good rains here this year until recently, and there still is considerable moisture in the subsoil, but the plants can't get it fast enough to replace the excessive losses from transpiration caused by the hot winds.

The first traces of stem rust were observed on winter wheat on June 18, and by the morning of June 22, there was a general sprinkling on the spring wheats, Hard Federation and Quality. Secondary infection appeared on winter wheats by June 25, but the extreme heat of the last few days has cooked the rust and dried the wheat stems to such an extent as to make the danger from rust very slight.

(June 7.)

The heat wave mentioned in the report of June 29 was broken on the night of the 30th by an all-night rain. Since that time there has been a week of exceptionally cool weather which has helped crops to recover from the effects of the heat.

Barley and early oats suffered the worst from the heat. These crops ripened prematurely while they were in the soft-dough stage. The leaves and sheaths were completely scorched off the wheats in the nursery, but the plants were not entirely killed. They appear to be filling quite normally, but the berry probably will be small as a result of the loss of the leaves at such an early stage of development.

The nursery in Day County was not injured by the heat. In fact, the wave of extreme heat which hit the James River Valley did not get into this hill section of Day County. The precipitation was heavy during the month of June in that section of the State, and both stem and leaf rust are now developing rapidly as a natural result. A good rust test probably will be obtained on the material in the nursery there.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (July 2)

The weather of the last half of June has been abnormally hot. Maximum temperatures of 90° or over were recorded on 8 days. Hot south winds and maximum temperatures of 99° on June 16 and 17 caused yellowing of the lower leaves and some firing of the upper leaves of wheat, oats, and barley.

Wheat varieties that headed during the hot days this month show some empty spikes. Heat and hot winds undoubtedly interfered with normal pollination. Supreme wheat has approximately 20 to 30 per cent of empty heads. In spite of the unusual heat, crops have a fair appearance and if July weather is not too hot and dry they stand a chance of producing normal yields.

Emasculations for a series of wheat crosses were started on June 24. Thirteen varieties were used in the crossing program. One hundred and thirty-eight pollinations have been made, covering 23 separate crosses and reciprocals. A high percentage of successful crosses is hardly expected because of abnormally high temperatures on several days when crosses were made. The maximum temperature recorded during that period was 102°, on June 28.

Single pustules of leaf and stem rust were noted on Little Club wheat on June 26.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (July 1)

The weather of the last half of June was very warm. A timely rain of nearly an inch on June 20 saved crops from serious injury from heat and drought. The average maximum temperature for the last half of June was 88°, the average minimum 60°. The maximum temperature for the last half of June was 102°, on June 28 and the minimum, 47° on June 5. Temperatures above 90° were recorded on 8 of the 15 days. On five of the 15 nights the minimum temperature was 70° or higher. The precipitation for the last half of June was 1.24 inches; the total for the month was 1.65.

Cutworms continued to cause injury to flax stands up to nearly the end of June. Several hundred cutworms were removed by hand from varietal plots and nursery. Wilt has destroyed nearly all susceptible flax varieties in the flax-sick soil nursery. Wilt also is very bad in varietal plots of Commercial Argentine and Redwing. Heat canker is serious in varietal plots in places where the stand is thin. Prompt cultivation following the rain of June 20 prevented serious injury to flax in nursery rows.

The rain on June 20 and cloudy weather for several days following made it possible to transplant in the spacing experiment to fill in spaces where the thin stand would not permit satisfactory spacing. Most of the transplanted plants apparently are growing as well as the plants that were not moved.

Counts of stand emerged and wilted plants were made in the flax-sick soil nursery.

Flax sown April 20, April 30, and May 9 in the date-and-rate-of-seeding-and-tillage experiment is in full bloom. Flax in nursery rows sown May 5 and in varietal plots May 15 also is in bloom.

About 450 people attended the experiment station "open house" Wednesday, June 24, under the direction of County Agents Newcomer and Putnam of Morton and Burleigh counties. Members of the experiment station staff served as guides to show the people about the Station.

Dr. C. E. Leighty, Principal Agronomist in charge of Dry Land Agriculture, arrived Tuesday, June 29, and will remain for several days to go over the Station projects.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (June 30)

The severe drought of the first half of June was relieved by rains, totaling 3 inches, during the last half of the month. The total precipitation was 3.46 inches, about 0.30 of an inch above normal for June. The rains will be of great value to all crops, although coming too late to produce high yields.

Winter rye is nearly ripe and winter wheat soon will be ripening. Early varieties of spring wheat, oats, and barley are almost fully headed, while later varieties have not yet begun to head.

Crop growth was somewhat retarded by severe freezing in May and by injury from wind and army cutworms. This has been offset by unusually hot weather in the latter half of June so that now crops have reached about the normal stage for the season. It is probable that the final yields will be considerably below normal.

The highest temperature for the month was 106 degrees, recorded on the 17th, and the minimum was 37 degrees, recorded on the 5th.

Official visitors at the Substation on June 29 were Dr. C. E. Leighty and J. M. Stephens.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (June 27)

A rain on June 24, totaling 0.63 of an inch, came at a very critical time for the crops of this region. In spite of the prolonged lack of rain, the moisture in the nursery and plots held out remarkably well until a week prior to the rain. At that time there were several days of extremely hot weather and hot winds, which removed any remaining moisture from the soil. The recent shower will help greatly for a short time but more will be needed soon to give even a fair yield. Some of the early varieties of wheat and oats are beginning to head about ten days earlier than usual.

The total rainfall for May and June this year is 2.35 inches, compared with 7.77 inches for the same period in 1930. The result, no doubt, will be shorter straw and earlier maturity. The effect on yield probably will be determined more by the moisture during the subsequent month.

Dr. P. F. Trowbridge and T. E. Stoa, of the North Dakota Experiment Station, Fargo, were visitors on June 25.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (July 1)

The weather for the past month has been unseasonably dry. Two rains, one totaling 0.45 of an inch and the other 0.49 of an inch, occurring on June 4 and 24, respectively, have kept crops from drying up completely. With no reserve moisture the effect of these rains has lasted but a few days. The total precipitation for the month was 1.30 inches, which is less than one half the 22-year average for June. The precipitation for the period January to June, inclusive, is 53 per cent of the average for that period.

On the 16th and 17th temperatures of 91° and 94° were recorded. These temperatures were accompanied by hot winds which caused spring grain, especially oats, to burn badly.

The temperatures for June were as follows: maximum, 94°, minimum, 38°, mean 62°.

Winter wheat plots started to head June 13, while the earliest variety of barley in the nursery headed out June 16. Adverse growing conditions have hastened maturity of spring grains so that by June 27 heading notes were being taken on all of the cereals. Prolonged dry weather has offered a splendid opportunity to kill weeds, and good progress has been made along this line.

Visitors at the Station included Dr. C. E. Leighty and J. M. Stephens, of the Division of Dry-Land Agriculture, and G. W. Morgan and M. A. Bell of the Northern Montana Substation.

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, Harland Stevens) (June 30)

A light hailstorm on June 2 caused some damage to small-grain and clover nurseries. There have been some strong winds, though it has not been very cold. The weather conditions on the whole for June have been very favorable for the growth of crops.

The temperatures have been slightly above the average for June, the maximum having been 80.5° and the minimum 46.0°, compared with a maximum of 77.7° and minimum of 42.4° for a 19-year average. The precipitation for the month was 0.78 of an inch, compared with 0.79 of an inch for the 19-year average.

Barley is fully headed in the nursery rod rows, and wheat and oats are progressing rapidly.

Trebi barley on the farms in this section appears favorable for a good yield.

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens) (July 1)

The extended drought in eastern Oregon was broken by copious rains over most of the section on June 13 to 15, inclusive. At Moro during these three days 1.19 inches of precipitation were recorded. Since that time the weather has been cloudy and unseasonably cool. There was an additional quarter of an inch of rain on the 27th, making the total for the month of June 1.60 inches, which is one inch more than the normal rainfall for that month.

The highest temperature recorded in June was 95° on the 6th. Since June 12 there has been no maximum temperature in excess of 80°. During most of the month, the maximum temperatures have been below 70°. The lowest temperature was 38° on the 29th.

The rains and cool weather in the last half of June have improved the condition of the crops considerably. Much of the winter wheat was too far advanced and had suffered too severely from drought to be benefited very much. On the Station the late-maturing winter wheats appear considerably better since the rain, but there is no apparent change in the condition of the early maturing varieties. Most of the spring wheats were fully headed before the rain and were very short. After the rain they failed to grow taller, but doubtless the addition to the soil moisture will result in plump grain and higher yields.

Most of the winter wheats are about ripe and a few of the early maturing spring barleys are ready to cut. Cutting will begin this week.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (July 6)

Uniform weather prevailed in June in the northern part of the State. There was no precipitation. Crops began to burn in many parts of the State, and there has been about one third of the normal flow of irrigation water. A great reduction in yield of the late crops seems apparent.

The maximum temperature for the month was 94° F., and the minimum, 38°. In general the temperature from day to day was very uniform. Dry farm wheat is ripening fast as a result of the drought. Barley and oat varieties also are beginning to ripen. Corn and sorghum have been growing very well during June.

This has been one of the driest seasons ever recorded in Utah.

CALIFORNIA

University Farm, Davis (Cereal Agronomy, G. A. Wiebe) [June 24]

Yields of barley varieties grown in 50th-acre plots at University Farm, Davis, Calif., 1931.

Variety	C.I.No.	Yield (Bushels per acre) Rep.1	Rep.2	Rep.3	Rep.4	Rep.5	Av.
Vaughn	1367	56.3	56.3	50.0	51.6	57.8	54.4
Hero	1286-1	51.6	50.5	36.5	62.5	57.8	51.8
Atlas	4118	50.0	59.4	46.9	41.1	53.6	50.2
Blanco	5045	55.2	39.1	37.0	50.0	52.6	46.8
Coast	690	43.2	43.2	36.5	47.9	48.4	43.8
Tennessee Winter	257	38.2	43.2	38.5	42.2	45.8	41.6
Club Mariout	261	42.7	35.9	26.6	46.4	43.8	39.1
Paso	5047	51.6	23.4	22.4	26.6	35.9	32.0
Sacramento	4108	24.5	44.8	14.6	15.6	43.8	28.7

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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture.
(NOT FOR PUBLICATION)

Vol. 23 July 20, 1931 No. 16
Personnel (July 11-20) and Field Station (July 1-15) Issue

PERSONNEL ITEMS

Dr. A. G. Johnson left Washington on July 13 on a 7-week trip to assist in a cooperative field survey of plant diseases jointly conducted by the United States Bureaus of Chemistry and Soils, Animal Industry, and Plant Industry in Wisconsin, South Dakota, North Dakota, Montana, Wyoming, and Nebraska.

Mr. C. H. Kyle returned to Washington on July 18 from Tifton, Ga., where for the past four weeks he was engaged in hand pollinating corn and in taking notes on the experimental corn plots. The weather was very hot and dry for that section of the State but corn survived until rains occurred on July 11. There now is promise of very good experimental results.

Mr. M. A. McCall left Washington on July 18 to confer with agricultural station officials and Federal employees and to look over cooperative experiments in Ohio, Indiana, Illinois, Iowa, Nebraska, Colorado, Idaho, Utah, California, Oregon, Washington, Montana, North Dakota, South Dakota, Minnesota, and Wisconsin. Mr. McCall will return early in September.

Dr. M. N. Pope left Washington on July 6 for Ohio, Illinois, Wisconsin, Minnesota, South Dakota, and North Dakota, to make studies in cooperative barley nurseries. Dr. Pope will return about September 1.

Mr. F. D. Richey returned to Washington on July 20 from a trip to Ames, Iowa, in the interests of cooperative corn investigations.

Mr. W. J. Sando returned to Washington on July 20 from a 5-week trip to Missouri, Kansas, Colorado, Utah, California, and Oregon, in the interests of cooperative wheat experiments.

MANUSCRIPTS AND PUBLICATIONS

Technical Bulletin No. 244 entitled "Harvesting Small Grain, Soybeans, and Clover in the Corn Belt with Combines and Binders," by L. A. Reynoldson, W. R. Humphries, and J. H. Martin, was received from the Government Printing Office on July 16, bearing date of May, 1931. (The investigation upon which this bulletin is based was conducted cooperatively by the Division of Farm Management and Costs of the Bureau of Agricultural Economics, the Division of Agricultural Engineering of the Bureau of Public Roads, the Division of Cereal Crops and Diseases of the Bureau of Plant Industry, and the agricultural experiment stations of Illinois and Indiana.)

The article entitled "Differentiation of Viruses Causing Green and Yellow Mosaics of Wheat," by H. H. McKinney, appears in Science 73(1902): 650-651. June 12, 1931.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

Coastal Plain Experiment Station, Tifton (Corn Breeding, H. S. Garrison) (July 15)

Hand pollinating is just about finished. Because of unusually hot, dry weather for southern Georgia at this time of year, the pollinating season was about a week later than in previous years. A few showers at that time enabled the corn to continue growth. There has been an abundance of rain this week and the prospects for a good corn crop are excellent.

The maximum temperature to date was 105°, recorded on June 29.

HUMID MISSISSIPPI VALLEY AREA (South to North)

INDIANA

Purdue University Agricultural Experiment Station, LaFayette, (Corn Rots and Metallic Poisoning, J. F. Trost, Acting in Charge) (July 13)

An unusually heavy development of bacterial wilt of sweet corn has been observed in fields grown for the canneries in central Indiana. Some fields of Golden Bantam which appeared in good condition the first part of June have had such a high percentage of the plants killed by this disease that the growers have seeded the fields to soybeans. One canner estimated a loss of 50 per cent of his Golden Bantam acreage. The greatest damage occurred in fields of Golden Bantam and Crosby. As high as 40 per cent of wilt-infected plants have been observed in fields of Country Gentleman this year.

In the trial plots at LaFayette some strains of Golden Bantam have been completely killed by bacterial wilt. A few inbred strains and some hybrids of this variety show less than 5 per cent of infection at tasseling time.

GREAT PLAINS AREA (South to North)

TEXAS

United States Dry-Land Field Station, Big Spring (Grain Sorghum and Broomcorn Investigations, F. E. Keating) [July 10]

Yields of grain-sorghum varieties grown at Big Spring, Tex., 1930

Variety	C. I. No.	Yield (Bu. per acre)
Milo		
Dwarf Yellow	332	7.3
Fargo Straightneck	809	2.5
Beaver	871	6.2
Smith's milo x kafir	808	9.6
Desert Bishop	---	3.4
Kafir		
Dawn	304	21.1
Reed	628	20.7
Standard Blackhull	71	17.9
Texas Blackhull	865	5.4
Wonder	872	13.0
Bishop	814	7.0
Algeria	---	8.0
Early Red	866	7.0
Feterita		
Standard	182	15.4
Spur	623	5.4
Dwarf	810	16.2
Hybrid Dwarf No. 6	---	16.1
Hybrid Dwarf No. 1	---	13.0
Miscellaneous		
Dwarf hegari	620	0
Premo	873	4.5
Chiltex	874	11.2
Schrock	616	17.1
Darso	615	14.1

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins) [July 16]

The weather in June was ideal for harvesting small grains but was too dry for the best growth of row and forage crops. The precipitation for the month was only 1.37 inches, which is 1.53 inches below normal. The accumulated departure since January 1 is 2.68 inches below normal. Temperatures in June were slightly above normal, averaging 1 degree. The maximum temperature of 99 degrees F., was recorded on June 26 and 30. The accumulated departure since January 1 is still 6.5 degrees below normal.

Oats in the varietal experiment were very good. While yields have not been computed, threshing weights indicate yields close to 100 bushels an acre. Barley varieties threshed out much better than was expected. Threshing of wheat varieties and all nursery material will be started in a few days.

On June17 the trip to the Panhandle of Texas to harvest the wheat nurseries was started. These experiments are conducted in eight counties and consist of 16 varietal tests of wheat. Seven varieties are sown in single-drill strips, from which the yields are computed by harvesting five separate rod-row samples from each plot. In addition, 11 varieties were sown at Price Memorial College, Amarillo. A nursery of approximately 600 rod rows also was sown at that place.

In general, the experiments were sown under good conditions, although the yields vary from very low to high. One varietal test was sown in 28-inch rows. The farmer had considerable winter grass and pepper grass and in order to overcome this he sowed the wheat in rows and cultivated it. This test probably will produce the best yields. In general, Tenmarq appears to be the best variety this year, although in some tests Blackhull will yield equally as well. Kelichor's Russian, a wheat introduced from Russia by Mr. W. B. Repp of Pratt, Kans., and distributed by Mr. Joe Kelichor of Plainview, Texas, also appeared very well in the tests this year. However, this variety, as well as Denton, shatters too much for a satisfactory combine wheat.

Harvest in the Denton section was completed about the middle of June. Threshing started immediately after this, and by the end of the month most of it was completed. Yields of oats in this section were very good, many fields averaging 85 to 90 bushels an acre; the highest yield reported was 115 bushels. Wheat yields were not so good, and varied from very poor yields to 30 bushels an acre. This year loose smut was an important factor in reducing yields throughout this section.

Wheat and oats are especially good throughout northern Texas, from Denton west to Chillicothe. In the vicinity of Amarillo wheat was injured considerably by the late spring freezes and probably will produce low yields. The best wheat in the Panhandle of Texas is in Gray County, near Pampa, Claude, and Hereford. The quality of grain is fine, and millers say that but little smutted wheat is being received. Barley also is very good on the Plains this year, many fields yielding 30 to 40 bushels an acre. Oats, however, are poor and will not yield more than 20 to 25 bushels an acre.

NEW MEXICO

United States Dry-Land Field Station, Tucumcari. (Grain Sorghum and Broomcorn Investigations) (D. R. Burnham) [July 15]

Yields of grain-sorghum varieties in date-varietal experiments, grown at Tucumcari, N. Mex., 1930

Variety	C. I. No.	Yield (Bu. per acre)		
		June 9	June 25	Av. 2 dates of seeding
Milo				
Dwarf Yellow	332	25.2	23.7	24.5
Double Dwarf	868	22.3	18.4	20.4
Beaver	871	24.3	20.7	22.5
Sooner	---	12.1	19.6	15.9
Kafir x milo x milo 31-79	---	19.1	15.4	17.3
Kafir x milo x milo -6	---	20.5	15.2	17.9
Kafir				
Dawn	340	19.1	8.4	13.8
Sunrise	472	16.6	11.1	13.9
Texas Blackhull	865	15.2	7.1	11.2
Reed	628	18.0	7.0	12.5
Early Red	866	14.8	6.6	10.7
Wonder	872	20.5	11.1	15.8
Feterita				
Standard	182	20.4	20.4	20.4
Miscellaneous				
Premo	873	17.0	9.1	13.1
Chiltex	874	19.8	8.4	14.1
Kaferita	---	20.9	15.5	18.2

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(July 14).

The weather for the first half of July was hot and dry. There is about one day's thinning and cultivating on the sorghum plots. Trimming of the plots and counting the stands will be the next work. The feterita in the first date-of-seeding plots is fairly well headed, and several other varieties are booting.

The maximum temperature for the first half of July was 101° on the 11th; the maximum on four other days was 100°; a minimum of 59° was recorded on the 5th, 8th, and 9th. The precipitation was 0.99 of an inch in six measurable showers.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens) (July 14)

Threshing of winter-wheat was completed on July 10. A favorable growing season is reflected in the yields, which are unusually high for this locality. Yields of four systematically distributed plots and the average yield for each variety are given in the following table:

Yields of winter-wheat varieties grown in quadruplicate 1/47th-acre plots at the Southern Great Plains Field Station, Woodward, Okla., 1931. The plots were on fallow ground.

Variety	C.I.No.	State No.	Yield (Bu. per acre) Series 1	2	3	4	Av.
Tenmarq	6936	----	51.6	46.5	49.3	47.7	48.8
Kanred	5146	----	47.5	47.3	47.5	47.9	47.6
Superhard	8054	----	49.5	48.3	44.4	46.0	47.1
Cheyenne	8855	----	45.6	48.1	46.1	48.2	47.0
Blackhull	6251	----	47.3	46.7	45.8	47.6	46.9
Prelude x Kanred	8886	----	48.9	46.0	45.2	46.2	46.6
Kawvale	8180	----	49.3	48.7	44.8	43.1	46.5
Redhull	----	----	47.9	43.4	44.4	47.1	45.7
Kharkof (Hays No. 2)	6686	----	44.2	45.3	46.4	46.6	45.6
Kharkof	1442	----	44.8	45.3	46.9	44.6	45.4
Turkey, Goodwell 102 P	----	----	47.1	42.8	45.7	45.8	45.4
Kanred x Marquis	----	Kans.2644	47.8	44.5	45.8	43.6	45.4
Eagle Chief	8868	----	47.0	44.3	46.9	42.8	45.3
Local Turkey	----	----	47.8	42.3	44.6	44.2	44.7
Sibley	5666	Okla.81	42.4	45.2	46.0	39.7	43.3
Nebraska No. 60	6250	----	39.0	40.5	47.1	42.2	42.2
Fulcaster	6471	----	42.4	41.8	42.0	39.5	41.4
Oro	8220	----	37.7	37.6	44.5	41.2	40.3
Cooperatorka	8861	----	34.4	33.0	40.0	38.2	36.4
Early Blackhull	8856	----	36.3	36.9	34.6	36.1	36.0
Nebraska No. 28	5147	----	33.0	33.8	32.8	33.5	33.3
Denton	8265	----	33.5	30.6	35.1	33.9	33.3
Harvest Queen	6199	----	33.0	27.9	33.9	33.5	32.1

In the rate-and-date-of-seeding experiment two plots of each rate on each date were grown. The average yields are given in the following table:

Average yield in bushels per acre of local Turkey winter wheat grown in duplicate 1/47th-acre plots seeded at four rates on five dates at the Southern Great Plains Field Station, Woodward, Okla., 1931.

Date of seeding	Rate per acre				
1930	2 pecks	4 pecks	6 pecks	8 pecks	Av.
September 15	42.7	46.6	44.7	44.4	44.6
October 1	41.5	47.0	46.9	46.5	45.5
October 15	42.7	43.7	45.7	46.6	44.7
November 1	38.0	40.6	39.4	39.2	39.3
November 15	27.4	33.1	34.5	38.9[a]	33.5
Average	38.5	42.2	42.2	43.1	

[a] Yield from only one plot.

Omitting the yields from the last date of seeding and averaging the yields of each rate for the first four dates, the average yields are:

	2 pecks	4 pecks	6 pecks	8 pecks
	41.2	44.5	44.2	44.2

KANSAS

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (July 13)

The last two weeks of June were marked by extremely hot, dry weather. Temperatures ranged above 100° F. for nine successive days. Winter wheat was too far advanced to be injured, but spring wheat and late oats in nursery sowings were severely burned. Very heavy leaf-rust and stem-rust infections developed in nursery sowings at Manhattan, but the premature killing of leaves and sheaths in general fields stopped all rust development. Crown-rust infection in the oat nursery was only well started when the leaves were suddenly dried up by extreme heat.

Wheat yields in Kansas have been surprisingly good. The last estimate gives the yield of winter wheat as a little over 201,000,000 bushels, by far the largest ever recorded. The average yield is a little over 16 bushels an acre, and test weight and quality are unusually high. The other side of the picture is not so bright. Wheat is selling for 28 to 29 cents a bushel at local elevators and a large portion of the crop is being sold at that price through necessity.

The first cutting of alfalfa was fairly good, but cutworms and grasshoppers have severely injured the second crop in many localities.

Corn and sorghum are in excellent condition and have been benefited by good rains on July 1 and 4. Cooling showers also occurred on July 12. The temperature for the first 13 days of July has been very moderate.

The leaf-rust nursery has been harvested, and threshing will soon be under way. Nearly 4,000 head selections were made in hybrid rows and a large proportion of them will be sown in the 1932 nursery.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (July 16)

Harvest was unusually early this year, most of the winter-wheat nursery and all of the winter-wheat varietal plots having been cut before the Fourth. Barley varieties were cut on July 8 and 9, and the oat varieties on the 10th. Spring wheats were harvested on the 11th, except the durums which were cut on the 14th. The only nursery material remaining to be cut is the spring wheat. Spring wheat did not ripen properly because of the dry conditions and seems to be badly shriveled. The other grain was in good condition, although the barley yields probably will be light.

Cool weather has made harvesting a more pleasant task than ordinarily is the case. Minimum temperatures of 47° were recorded on two days, July 5 and 7. The humidity has been high for the most part. The precipitation recorded on the 4th and 13th totaled 0.40 and 0.28 of an inch, respectively. The highest temperature of the season was 102° on the 14th. The evaporation for that day was 0.460 of an inch.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (July 16)

Growing conditions in the first half of July have been favorable for crops, particularly corn. Rain fell on 9 days, totaling 2.88 inches. Temperatures ranged from 45 to 97 degrees with a mean of 68 degrees.

Early oats and barley varieties are beginning to ripen. Harvest will begin in 5 to 10 days.

Stem-rust infection is developing rather slowly. The first secondary infection was noted on July 10. Several centers of secondary infection were noted on July 13. Scattered pustules of stem rust have been noted in farmers' fields. Most fields are too far advanced for any serious infection.

Many farm fields headed out when 6 to 8 inches high and many such fields with good to excellent stands probably will not yield a bushel to the acre.

Messrs. S. C. Salmon, J. Allen Clark, C. McKee, and W. J. Sando were Station visitors last week.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.)(July 16)

The weather in the first half of July was favorable for crop growth. Abundant and frequent rainfall brought the total to date to within about an inch of normal. Hot, sultry weather prevailed during most of this period. No very high temperatures were recorded.

Flax and other crops made rapid growth during the first two weeks of July. Flax sown April 30 has almost finished blooming. Flax reseeded May 29 in nursery rows is just coming into bloom. Flax sown May 20 in the date-and-rate-of-seeding-and-tillage experiment is cleaner and more promising than earlier or later seedings. Russian thistles are very bad in all earlier seedings. Plots sown May 20 and later are almost free from thistles. Pigeon grasses, red root amaranth, and other weeds are very bad in plots sown May 29.

Wilt apparently is worse than it was in 1930. Some varieties that had little wilt in 1930 and previous years are wilting very badly this year. No rust has been noted on flax so far.

Mr. A. C. Dillman arrived July 8 and left July 9 for Bozeman, Mont., to take notes on the classification nursery. He plans to return here later when the flax is more advanced and in better condition for observation.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (July 16)

Several rains occurred in July and, together with those of the last 10 days of June, have caused crops to revive from the effects of the previous drought. The total precipitation so far this month is 1.59 inches. Between four and five inches have been recorded since June 20.

Winter rye varieties are ripe, and winter wheat is ripening. The yield of both probably will be extremely light. The spring-sown cereals will yield better than the prospect indicated a month ago. Judging by present appearances the late varieties will yield the best, as the early ones were too nearly mature to be helped much by the recent rains.

Corn made rapid growth during the recent hot weather and promises to be the best cereal crop this season.

Only a few pustules of rust have been observed so far. Leaf rust was first noticed on July 7, and stem rust on July 10.

In the corn nursery ears are being bagged preparatory to selfing and cross-fertilizing. About 50 heads of spring wheat have been crossed.

Official visitors at the Substation included Director P. F. Trowbridge, North Dakota Agricultural Experiment Station, Prof. Clyde McKee, Montana State College of Agriculture, Mr. H. Ukkelberg, and Mr. W. J. Sando.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (July 16)

Since the breaking of the drought on June 24, there has been a total precipitation of 3.92 inches. Prior to that time but 2.22 inches had been recorded since April 1. Because of lack of moisture in the early growth stages, straw will be short and yields only medium, but rapid growth resulting from recent rains indicates that well-filled grain may be expected. Nursery and plots are generally fully headed.

Early varieties, and fields receiving careless tillage methods, will give very poor returns in this section.

Rust was first observed on July 6, the same date on which it was first noted in 1930. Conditions for the development of rust in the past ten days have been partly favorable and a steady increase in infection is apparent.

Messrs. Hary Ukkelberg, S. C. Salmon, and J. Allen Clark were recent visitors.

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (July 15)

The drought continued until July 15, when a good rain of 0.78 of an inch was recorded. All grain suffered from a lack of moisture and burned considerably before the last rain. Tipburned heads are present in many of the spring wheat plots because of unfavorable conditions at the time of heading.

Smut infection is high this year in both the winter and spring wheat varietal smut nurseries. In many of the winter-wheat bulk hybrids the counts have shown over 50 per cent of smut infection.

The earlier seeding of Karmont winter wheat will be ready to harvest by July 21.

The maximum temperature was 91° on July 10; minimum, 36° on July 6, and mean, 61°. The precipitation totaled 1.24 inches.

WESTERN BASIN AND COAST AREAS (North to West and South)

CALIFORNIA

University Farm, Davis (Cereal Agronomy, G. A. Wiebe) [July 13]

Average acre yield of wheat varieties grown in replicated 50th-acre plots at University Farm, Davis, Calif., 1931

Variety	C.I.No.	Yield (Bu. per acre) Rep.1	Rep.2	Rep.3	Rep.4	Rep.5	Av.
Montezuma	8892	25.4	44.6	31.7	34.2	50.0	37.2
Ramona	8241-1	39.6	28.7	39.2	29.2	46.2	36.6
Pusa No. 4	8899	27.9	32.5	28.7	42.5	43.3	35.0
Poso	8891	20.4	31.7	25.0	36.7	47.1	32.2
Bronco	8894	29.6	31.2	26.7	35.0	38.3	32.2
Hard Federation	4733	31.2	24.2	41.2	23.7	40.0	32.1
Federation	4734	30.4	25.4	33.3	25.4	41.2	31.1
Capay	8223	20.0	29.2	27.5	33.3	42.9	30.6
Baart	1697	23.7	26.2	30.8	31.7	40.0	30.5
Onas	6221	27.5	23.7	29.2	26.2	43.3	30.0
White Federation	4981	30.4	25.0	36.7	22.9	31.7	29.3
Bunyip	5125	25.0	25.0	29.6	25.4	32.7	27.5
Duro	8242	24.2	25.8	29.6	25.4	29.2	26.8
Escondido	8240	22.5	31.2	25.0	25.4	25.4	25.9
Pacific Bluestem	4067	12.5	32.5	16.7	21.7	37.5	24.2
Jenkin	5177	9.6	19.6	13.3	27.9	36.7	21.4
Little Club	4066	8.7	23.3	11.2	*	32.9	19.0

* Plot plowed up to provide space for irrigation ditch.

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel) (July 9)

The weather in June was very mild for this section. The mean maximum temperature of 90.7° was about 8 degrees cooler than for June, 1930. Other meteorological data for June, 1931, are: Mean minimum temperature, 66.3°; maximum temperature, 105°; minimum temperature, 55°; precipitation 0.49 of an inch.

Yield of wheat varieties grown in replicated 44th-acre plots at Mesa, Ariz., 1930-31

Variety	C.I.No.	Average Yield (Bu. per acre)	Test weight (Lbs.per bu.)
Hard Baart	----	53.8	64.0
Baart Selection 34-16	----	49.2	64.0
South African	----	49.1	61.0
Pacific Bluestem	4067	47.9	60.0
Jenkin	5177	47.5	57.0
Baart Selection 34-H-5	----	46.6	63.5
Baart	1697	46.2	63.0
Onas	6221	45.8	61.0
Utac	1045	45.0	55.0
Baart Selection 34-H-23	----	44.9	61.0
Escondido	8240	44.1	61.5
Dicklow	3663	43.6	56.0
Federation	4734	43.1	61.5
Hard Federation	4733	41.7	61.5
Pusa	8899	40.8	64.0
Marquis	3641	37.6	59.5
White Federation	4981	36.5	61.5

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BUREAU OF PLANT INDUSTRY

CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 August 10, 1931 No. 18
Personnel (Aug. 1-10) and Field Station (July 16-31) Issue

NOTICE

The issue of the Cereal Courier of July 31 (Vol. 23, No. 17) was omitted.

PERSONNEL ITEMS

Dr. H. B. Humphrey left Washington on July 24 to visit field stations in North Dakota, South Dakota, and Minnesota in the interests of cooperative research on cereal rusts. He also will confer with officials of agricultural experiment stations regarding future investigations.

Mr. J. W. Jones was authorized to attend Farmers' Week at Fayetteville, Ark., August 4 to 7, and to give an address entitled "Relation of Improved Varieties and Methods of Production to Quality and Yield of Rice." Mr. Jones expected also to confer with officials of agricultural experiment stations at Fayetteville and Stuttgart regarding cooperative rice investigations and to inspect the cooperative experiments at Elsberry, Mo.

Dr. J. H. Martin left Washington on July 31 for an extensive trip in the interests of grain sorghum and broomcorn investigations. He will look over cooperative experiments in Texas, Oklahoma, Kansas, Nebraska, Colorado, New Mexico, Arizona, California, Utah, and Illinois. He also will conduct physiological and breeding experiments and confer with officials of agricultural experiment stations in the States mentioned.

MANUSCRIPTS AND PUBLICATIONS

42 A manuscript entitled "Experiments in Wheat Production on the Dry Lands of Oregon, Washington, and Utah," by D. E. Stephens, H. M. Wanser, and A. F. Bracken, was submitted on August 8 for publication in the Technical Bulletin series to supersede Department Bulletin 1173.

Galley proof of the article entitled "Correlation Between Yields of Winter Wheat Varieties Grown in Various Locations in the Columbia Basin of Oregon," by J. Foster Martin and D. E. Stephens, for publication in the Journal of the American Society of Agronomy, was read on July 23.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor) (Aug.7)

Weather conditions on the whole have been favorable for harvesting and threshing. Wheat yields were approximately 10 to 15 per cent above average. Rye yields were somewhat higher. On March 1 the condition of wheat was considered poor, inasmuch as no fall or late winter tillering had occurred. March weather conditions were favorable and spring rainfall (April, May, and June) was considerably below average. Leaf rust was observed about flowering time but failed to spread until late in the season. About one week before harvest stem rust was epidemic.

The yields of wheat varieties grown in the triplicated 40th-acre test are shown in Table 1.

Table 1. Yield of wheat varieties grown in triplicated 40th-acre plots at Arlington Experiment Farm, 1930-1931.

Variety	C.I.No.	Average yield (Bu. per acre)	Per cent of yield of nearest check plots
Red Wonder	5780	44.0	113.7
F_{10} hybrid mixture	----	43.5	112.4
Missouri Bluestem	1912	39.0	108.9
Leap	4823	37.6	105.0
Mammoth Red	2008	40.6	104.9
Dietz	1981	37.3	104.2
Genesee Giant	1744	39.9	103.1
Dixie	10070	37.3	100.3
Poole	1979	35.9	100.3
Nittany	6882	39.2	99.5
Wheat-rye 16-1A	----	38.8	98.5
Fultz	1923	36.8	98.1
Selection 1915 B C	----	36.0	96.8
Fulcaster	1945	36.1	96.3
V. P. I. 131	----	35.8	96.2
Purplestraw	1957	35.8	95.5
Wharton	10071	35.3	94.9
Arlando	10069	37.2	94.4
Fulcaster	6162	34.6	92.3
Shepherd	6163	36.0	91.4

The comparative standing of 11 varieties of wheat in which the two border rows of each plot were harvested separately is shown in Table 2.

Table 2. Grain yields of 11 varieties of winter wheat in per cent of the check variety with reference to including, discarding, or using alone the border rows of the plots. (Triplicate 40th-acre plots)

		Yield of variety in per cent of check plots a/ with border rows:		
Variety	C.I. No.	In	Out	Alone
Red Wonder	5780	113.7	114.1	111.3
Missouri Bluestem	1912	108.9	108.6	109.2
Leap	4823	105.0	103.7	109.2
Mammoth Red	2008	104.9	103.4	108.5
Dietz	1981	104.2	103.7	104.6
Genesee Giant	1744	103.1	103.0	101.4
Poole	1979	100.3	100.0	100.0
Fultz	1923	98.1	98.1	97.1
Fulcaster	1945	96.3	95.1	98.6
Purplestraw	1957	95.5	94.6	97.1
Fulcaster	6162	92.3	90.8	95.7

a/ Check plots in each method harvested similarly to the variety compared.

The yield of the border row of each plot averaged 62.8 per cent more than that of the average of the inside rows of the plots.

Dakold rye proved to be well adapted to the past crop year, surpassing all other varieties in yield, as shown in Table 3.

Table 3. Yield in bushels per acre of rye varieties grown in 20th-acre plots at Arlington Experiment Farm, 1931

Variety	C.I. No.	Yield (Bu. per acre)
Dakold	----	49.1
Star	----	46.6
Von Rümker	173	44.5
Mexican	108	40.5
Von Rümker	133	35.4
Abruzzes	40	34.8
Rimpau	126	34.5
St. Johns	130	29.6
Rosen	195	26.8
Selection 41	---	25.5

The four varieties of spelt yielded slightly below average as is shown in Table 4.

Table 4. Grain yield of winter spelt varieties grown in 40th-acre plots at the Arlington Experiment Farm, 1931

Variety	C.I. No.	Yield (Bu. per acre)
Bearded Winter	1724	66.6
Alstroum	3264	61.0
Alstroum	1773	54.4
Red Winter	1772	53.8

The total rainfall for the crop year was 24.2 inches, the lowest since weather records have been taken at the Arlington Experiment Farm, and compared with the average of 40.7 inches.

HUMID MISSISSIPPI VALLEY AREA (South to North)

MISSOURI

Agricultural Experiment Station, Columbia (Cereal Agronomy, L. J. Stadler) (Aug. 1)

Conditions have been rather unfavorable for the corn crop in Missouri this year as the result of the extreme drought of last season, which left the subsoil dry in the third and fourth foot at the beginning of the 1931 crop season. The corn is therefore unable to stand even moderately long periods of dry weather. The breeding and genetic corn plantings were saved by a rain of about 1.5 inches on July 19, after the corn had been almost completely ruined by dry weather. The crop is now again suffering from drought and probably will be a failure unless there is a good rain soon, and well distributed rains from now on through the critical period. About two acres of the genetic plantings at the Columbia field have been under irrigation for more than a month and can be saved by this method. The breeding corn is grown at the new Beazley farm four miles from Columbia, where water for irrigation is not available.

Prof. R. T. Kirkpatrick returned on July 1 from one year's leave spent in graduate study at Iowa State College, and has resumed his work in the corn-breeding project. Dr. Barbara McClintock, National Research fellow in biology, has been in residence since June 1, and is engaged in cytological studies connected with irradiation experiments.

Recent visitors included Dr. D. F. Jones, Connecticut Agricultural Experiment Station, Prof. C. K. McClelland, Arkansas Agricultural Experiment Station, and Prof. F. H. Hull, Florida Agricultural Experiment Station.

INDIANA

Purdue University Agricultural Experiment Station, LaFayette
(Leaf Rusts, R. M. Caldwell) (Aug. 3)

Harvesting and threshing of the 1931 wheat-leaf-rust nursery was completed under optimum weather conditions. The highest yields of several wheat varieties on record for the agronomy experiment farm were obtained this season. The season also was ideal for study and selection in the breeding nursery for rust resistance. A natural leaf-rust epidemic developed early, reaching a severity of 90 to 100 per cent on susceptible varieties soon after the plants passed the flowering stage. About 5,000 head selections were made in the hybrid material this season.

Leaf rust was the only disease prevalent throughout the nursery, although black chaff was present in a high percentage of lines having Hope wheat as a parent. Sulphur dusting trials for leaf-rust control were particularly successful and indicate that leaf rust was responsible for over 20 per cent reduction in yield of highly susceptible varieties.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul
(Wheat Breeding, E. R. Ausemus) (Aug.3)

The weather in July was extremely hot and dry. The maximum temperature was 104°, the minimum 47°. There was 0.54 of an inch of rainfall recorded on July 4. The next rains of any consequence fell on July 28 and 31, 0.82 and 0.44 of an inch, respectively, making the total precipitation for the month 1.91 inches.

Winter wheat was too far advanced to be greatly injured, but spring cereals were severely burned. Spring cereal crops did not suffer as much from the drought at the branch stations, Saseca, Morris, and Crookston, as at University Farm.

The early planted corn was severely injured also, but the recent rains will be beneficial to the later planted crops.

Harvest of both winter and spring cereals was unusually early this year. The plots at University Farm have been threshed and threshing of the nursery has been started.

Stem and leaf rust did not develop to any extent in the rust nursery so no attempt will be made to distinguish between the susceptible and resistant strains this year. Individual plants were selected from the hybrid material and these will be tested in the rust nursery again next year.

Recent visitors at the Station were Messrs. S. C. Salmon, J. A. Clark, A. C. Dillman, W. J. Sando, H. A. Rodenhiser, and M. N. Pope.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger) (July 31.)

The last half of July continued hot and dry. Sorghums and broomcorn have developed and headed rapidly in spite of the drought. Most of these crops are from a week to ten days further advanced than was the case a year ago. All sorghum varieties of the May 25 seeding except Fargo milo and Dwarf hegari are headed, and Feterita is coloring. Nine of the 19 varieties of the June 8 seeding also are heading. The growth of most plants will be short this season.

The work at present consists of bagging heads and hoeing weeds.

The maximum temperature for the last half of July was 106° on the 22nd, the minimum for the same period was 65° on the 25th; the precipitation was 0.12 of an inch, recorded in three showers.

Southern Great Plains Field Station, Woodward (Wheat Improvement. Edmund Stephens) (July 31)

Weighing the grain from the nursery and computing the nursery yields have been completed. The nursery yields were much lower than yields from the varietal plots this year. It is possible that the wider spacing between the nursery rows may partly account for the discrepancy. This is indicated by the fact that in a comparison of furrow drilling with 14-inch spacing and common drilling with 7-inch spacing, the average yield of the furrow-drilled plots was 6.5 bushels lower than that of plots drilled with an ordinary 7-inch disk drill.

Agricultural Experiment Station, Manhattan (Wheat Foot Rots, Hurley Fellows) (L. W. Boyle) (July 27)

The type of foot rot caused by Helminthosporium species is prevalent in fields of winter wheat in the Panhandle regions of Texas and Oklahoma, western Kansas and eastern Colorado, nonirrigated areas of southern Idaho, eastern Oregon, and the Judith Basin of Montana.

Late in May, the foot-rot disease was very apparent as "white heads" in fields of winter wheat in the Panhandle of Texas. Some localities suffered considerable loss from this disease alone. At the same date in the panhandle region of Oklahoma, "white heads" were not so apparent but examination of the crowns of plants revealed that the disease was well established and would play an important part in reduction of yields. In western Kansas the disease was very prevalent and caused much loss in some localities, while in others it apparently was checked in its severity by timely rainfalls. In northeastern Colorado many seemingly drought-stricken fields were found to be diseased. Evidence showed that drought alone was not responsible for all the losses. In southern Idaho, eastern Oregon, and the Judith Basin of Montana the disease caused stunting and premature ripening of plants, thus causing loss because of light, poorly filled grain. This condition was being attributed in many cases entirely to drought without consideration of disease or comparison of the results of drought alone with those resulting from both drought and disease.

Data gathered at certain points in the area described are tabulated below. It will be noted that these give further support to previous indications that retardation in date of the fall seeding lessens the amount and severity of the infection.

Significant varietal differences of resistance or susceptibility to the foot-rot disease were not found in the standard winter-hardiness nursery at Akron, Colo., where the disease was prevalent.

Amount and severity of foot-rot of winter wheat caused by Helminthosporium species when the crop is sown at various dates.

Date of seeding 1930	Moccasin, Mont. Crowns infested Per cent	Moccasin, Mont. Severity Per cent	Pendleton, Ore. Crowns infested Per cent	Pendleton, Ore. Severity Per cent	Akron, Colo. Crowns infested Per cent	Akron, Colo. Severity Per cent	Guymon, Okla. Crowns infested Per cent
July 15	46	4	--	--	--	--	--
July 28	46.5	14	--	--	--	--	--
Aug. 12	60.5	12	--	--	--	--	--
Aug. 18	--	--	--	--	98.9	100	--
Aug. 25	42.8	2	--	--	--	--	--
Sept. 1	--	--	--	--	83	80	54.4
Sept. 8	6.2	T	--	--	--	--	--
Sept.15	--	--	66	50	67.6	10	45.5
Oct. 1	--	--	37	10	60.98	2	23.0
Oct. 15	--	--	14	3	33.96	T	1.0
Nov. 1	--	--	3	3	16.77	T	9.0
Nov. 15	--	--	--	--	--	--	13.7
Dec. 1	--	--	--	--	--	--	7.8

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (Aug. 3)

The last two weeks of July were marked by extremely high temperatures and lack of rain in most of the small-grain area of Kansas. The maximum temperatures at Manhattan for the 5-day period, July 27 to 31, were 111°, 109°, 107°, 105°, and 101° F., respectively. Corn was badly burned in some localities. Good local rains fell on July 31, August 1. and August 2 and relieved drought conditions in many counties. The rainfall at Manhattan for the 36-hour period, July 31 to August 2, was about 5 inches. Corn and sorghum in experimental plots were on the verge of serious injury but probably were saved by the rain.

Only a small part of the wheat land in Kansas has been plowed in preparation for the crop of 1932. Normally a large part of it is plowed in July. If the present low price of wheat continues till sowing time, the acreage probably will be greatly reduced. If prices should improve, much wheat land probably will be prepared late by discing or one-waying. Such an event probably would put large acreages on a very precarious footing.

The grain from the leaf-rust nursery has been threshed and is now being worked over in preparation for packeting of seed for the fall nurseries. About 1,500 head selections from promising crosses have been threshed and will be studied for grain characters. It is planned to sow about 1,000 head rows this fall.

Fort Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson) (July 31)

The rainfall for July has been one of the lowest on record and high temperatures have prevailed. Corn is suffering in this section but the sorghums are holding their own.

Just now data are being prepared on the 1931 small-grain crop for use in the annual report. At the same time notes are being taken on the sorghums. A number of crosses will be made and heads bagged for pure seed.

Farmers in this section are storing a considerable quantity of their wheat. There will be some reduction in the wheat acreage in Kansas. Farmers are not making very rapid progress in preparing their new seed beds. This section has a very heavy stubble and as long as it is dry it is difficult to handle the soil. A larger acreage will be held over for fallow than in other years, judging from present indications.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis) (Aug. 1)

So far this year only 7.58 inches of rainfall have been recorded at the Station. This is 64 per cent of the 23-year average rainfall for the same period. April passed with only approximately 1/3 normal, May with 1/2 normal, and June with 9 per cent less than normal. This rainfall record will explain the low yields of small grains at this station.

A severe hailstorm occurred on July 19 which greatly damaged the few small-grain plots remaining to be harvested. The hail damaged the corn plots severely but since these plots had already been injured by drought it is rather hard to estimate what the hail damage will be. Prospects for the millets and grain sorghums are poor. Stands as a whole are thin. Grain sorghums in some cases are heading out while less than knee high.

Threshing of the wheat, barley, and oat plots was completed this week. Yields of the winter-wheat varieties are as follows:

Yields of winter-wheat varieties grown in 1/50th-acre plots, 2 plots on fallow and 2 on cornland, at the Akron Field Station, 1931

Variety	C.I.No.	Yield (Bu. per acre) Fallow 1	Fallow 2	Cornland 1	Cornland 2	4-plot Av.
Kharkof (Hays No.2)	6686	15.0	17.5	5.8	6.3	11.2
Nebraska No. 6	6249	16.5	15.8	4.6	6.1	10.8
Kharkof	1583	16.3	16.1	5.0	5.4	10.7
Turkey Sel. 159	----	16.7	17.8	2.1	5.7	10.6
Cheyenne	8885	17.9	16.5	4.4	3.5	10.6
Pesterboden Sel.1564-2-11	--	15.4	16.1	5.0	4.8	10.3
Blackhull	6251	14.8	17.5	2.5	5.7	10.1
Minturki-Belog.-Buff.	8033	16.3	17.9	1.3	4.5	10.0
Alton	1438	15.8	15.0	5.0	3.8	9.9
Oro	8220	15.0	15.8	4.2	4.2	9.8
Nebraska No. 60	6250	14.0	13.8	6.1	5.0	9.7
Newturk	6935	15.4	14.8	4.2	4.2	9.7
Minturki x Minhardi	8034	13.0	14.8	4.7	6.3	9.7
Kansas 441 (Marquis x Kanred)	10008	14.8	15.7	2.3	5.4	9.6
Kanred Sel. 0166	----	15.8	15.7	4.4	1.7	9.4
Kharkof	1442	15.8	15.7	3.3	2.7	9.4
Tenmarq	6936	14.0	15.4	3.3	4.2	9.2
Colorado Mutant 556	----	12.2	13.3	6.7	2.9	8.8
Kanred	5146	15.0	14.6	3.2	1.3	8.5
Prelude x Kanred	8886	13.6	16.3	2.5	1.7	8.5
Early Blackhull	8856	10.4	14.2	0.8	4.2	7.4
Minturki	6155	10.0	11.7	1.7	2.3	6.4

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (Aug. 1)

The latter part of July was characterized by high temperatures, considerable wind, and high evaporation. The highest temperature was 105° recorded on the 23rd, and the maximum was 100° or higher on 7 days since the middle of the month. Evaporation of over one half of an inch was recorded on the 28th and 31st. There have been two slight rains.

Corn is beginning to show effects of severe drying. Inbred strains from the Arlington Experiment Farm are parched, even though they are growing on irrigated ground.

Plot threshing has been completed, as has also spring and winter-wheat nursery threshing. The following table shows average yields of the leading varieties in the field plots this year.

Average yields of winter wheat after summer fallow and corn stubble grown at the North Platte Substation, 1931

Variety	C.I.No.	Fallow	Corn Stubble	Total Av.
Nebraska No. 60	6250	53.0	30.0	41.5
Cheyenne	8885	56.6	26.3	41.5
Sherman	4430	51.5	30.0	40.6
Newturk	6935	51.6	28.7	40.1
Turkey (local)	----	51.9	26.7	39.3
Beloglina Selection N. P. 11	8884	50.0	28.7	39.3
Oro	8220	48.6	28.0	38.3
Kharkof	1442	48.6	27.7	38.1
Kharkof (Montana 36)	5549	48.3	28.0	38.1
Tenmarq	6936	50.0	26.3	38.1
Kanmarq	6937	50.3	25.0	37.6
Kanred	5146	49.3	24.3	36.8

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (July 24)

On a recent trip through the Black Hills of South Dakota the writer observed that even the hills have suffered noticeably from drought. Pasture and cereal crops throughout southwestern North Dakota and all of central and northern South Dakota are being severely injured by hot winds and drought. The crops in the vicinity of Mandan have a favorable appearance. Corn is especially fine.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (Aug. 5)

The last half of July was exceptionally dry and hot. The mean temperature for this period was about 5 degrees above the average July mean temperature for the last 17 years. The maximum temperature was 108 degrees on July 27, and the minimum, 54 degrees on July 18, 22, and 30. The average maximum was 88°, and the average minimum 60 degrees. The precipitation recorded in this period totaled 1.44 inches. The evaporation was 4.181 inches, which is about an inch more than the average evaporation for this period for the last 17 years.

Cereal crops and flax have ripened rapidly during the last two weeks. Flax in the 17-foot row nursery and date-of-seeding plots sown April 30 is almost ready to harvest.

Wilt in the flax-sick soil nursery is destroying many large flax plants that appeared healthy a short time ago. Some varieties usually considered wilt-resistant are wilting very badly. Some varieties and selections, grown from seed of plants that survived on flax-sick soil in 1930, have succumbed completely to wilt. Other varieties and selections grown under the same conditions are entirely free from wilt. No pasmo has been noted to date. A trace of rust has appeared on flax in nursery rows.

Grasshoppers are becoming very numerous and are likely to cause serious damage to flax before harvest.

The Missouri Slope Fair was held on July 28, 29, 30, and 31. The showing of livestock was exceptionally good. The season was too early for a satisfactory showing of field crops.

Visitors during the last half of July included Messrs. A. C. Dillman, F. A. Coffman, J. A. Clark, and H. B. Humphrey, of the Division of Cereal Crops and Diseases; D. H. Jones, Aberystwith, Wales; Frederick Sohn, Berlin, Germany; Robert Taylor, Aberdeen, Scotland; H. R. Sumner and R. C. Billings, Northwestern Crop Improvement Association, Minneapolis; T. E. Stoa and L. R. Waldron, North Dakota Agricultural Experiment Station, Fargo, No. Dak.; and R. W. Smith, Dickinson, No. Dak.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (Aug. 1)

Extremely hot and dry weather prevailed most of the latter half of July. The maximum temperature was 109° on the 27th. This was a new record for Dickinson. Decidedly cold and wet weather set in on the 30th and there were three days of drizzling rain, totaling 2.04 inches. The moisture and cool weather will be of great benefit to corn, pastures, and such late crops as are not already mature.

Cereal plots are mostly ripe. Varietal plots of spring wheat and most of the oat varieties have been harvested. As soon as the fields dry up sufficiently harvesting operations will be continued with oats, barley, and such nursery varieties as are ripe enough.

The plots of spring grain sown on cornland will give light yields. On account of a combination of unfavorable factors the winter grain is almost a failure. The spring nursery sown on fallow will give fair yields.

Official visitors in the past two weeks were Messrs. A. C. Dillman, J. A. Clark, K. S. Quisenberry, F. A. Coffman, and R. W. Leukel, Division of Cereal Crops and Diseases; Supt. Beyer Aune and A. Osenbrug, Belle Fourche Field Station, Newell, So. Dak., and Mr. H. G. Ukkelberg, St. Paul, Minn., who took notes on the rust nursery.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) [Aug. 1]

Hot weather in the last half of July has rapidly depleted the moisture falling earlier in the month. Oat and barley fields are ripening and will produce a fair crop only on well-tilled land. Wheat is generally late enough to benefit from a rain, should one occur shortly. Varietal plots promise fair yields and the nursery still has a favorable appearance. Rust, which has been apparent for 25 days, has developed rather steadily till at present varieties such as Peliss and Supreme show 40 to 50 per cent infection. Victory oats also show about 40 per cent infection of stem rust. Crown rust is plentiful in the nursery. Rust development has not been so rapid as in 1930 because of lack of moisture and extreme heat.

The maximum and minimum temperatures for the month were 103 and 42 degrees, respectively. The precipitation totaled 2.36 inches, 2 inches of which fell in the first 15 days of the month.

Station visitors in the past two weeks included Mr. H. G. Ukkelberg; Dr. Karl Isenbeck, University of Halle, Germany; Mr. T. C. Loh, China; Dr. S. L. Macindoe, New South Wales Department of Agriculture, Australia; Dr. H. A. Rodenhiser, and Mr. R. H. Bamberg.

MONTANA

Montana Agricultural Experiment Station, Bozeman. (Austin Goth) (July 27)

The winter-wheat varieties are being harvested today. Some of the later ones will be left standing for a few days. One of the Kanred x Prelude strains, which is the earliest wheat in the nursery, was harvested four days ago.

Shortage of irrigation water has curtailed irrigation activities. Grains were irrigated but once, while alfalfa, clover, and potatoes were irrigated twice.

The extremely dry weather is causing the outbreak of more forest fires than have occurred since 1919, when similar drought conditions prevailed.

Recent station visitors included Messrs. J. A. Clark, A. C. Dillman, S. C. Salmon, H. A. Rodenhiser, W. J. Sando and R. W. Leukel, and H. H. Flor.

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) [Aug. 1]

A general rain, totaling 1.24 inches, fell on the last three days in July. Although this rain came too late to benefit small grains, pasture and late feed crops have been aided materially. Summer fallow moisture conditions have greatly improved.

Harvesting of nursery rows of winter wheat, oats, and barley has been in progress during the past week. Early seedings of winter wheat in plots, as well as a few barley varieties, have been cut.

The annual Judith Basin Farmers' Picnic was held July 16 at the Station. There were about 2,000 people in attendance, which is a very good turnout, considering general economic conditions.

Visitors on the cereal project included Messrs. J. A. Clark, S. C. Salmon, Hurley Fellows, P. A. Young, R. W. Leukel, and Dr. Boles.

The temperatures for the month were as follows: Minimum, 37° on the 3rd, maximum, 101° on the 21st and 23rd, mean 67°. The precipitation totaled 2.48 inches. The total since January 1 is 6.42 inches. The maximum temperature of 101° is the highest on record at this Station, while the precipitation of 2.48 inches is above the average for July.

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Agricultural Experiment Station, Moscow (Wheat Improvement, V. H. Florell) (July 25)

The cereal crops were greatly benefited by the rains and cool weather of the last two weeks in June. The cool weather, which was characterized by subnormal temperatures during the time of the severe heat wave in the East, lasted until about the end of the first week in July. Since that period above-normal temperatures have prevailed much of the time, and the winter-sown cereals are ripening rapidly.

Winter wheat is in good condition in most fields in this locality and will be ready to combine soon. A short distance to the west some fields already have been harvested. Plump, well-filled grain is being produced as a result of the excellent growing conditions of the past weeks. Spring cereals also are doing well and promise to produce good yields of grain on many fields.

Harvesting of the winter-wheat plots was begun on July 20. All but a few varieties are free from lodging, and no shattering has occurred in any variety in this group. Harvesting of the foreign wheat nursery was begun on July 18, and of the classification nursery on July 20. Considerable shattering occurred among the Chinese wheats in the foreign wheat nursery on account of a moderately high wind on July 10. Most of this collection were very early and susceptible to shattering.

Mr. B. B. Bayles was a Station visitor on July 20.

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens) (July 30)

Comparatively cool temperatures prevailed in most sections of eastern Oregon in July. At Moro the highest temperature recorded was 96 degrees on the 8th. There was no precipitation.

Harvesting in the Columbia Basin counties has been in progress for more than two weeks. Yields are low in most localities, varying from 5 to 20 bushels an acre. Normal yields are being harvested in eastern Umatilla County where fall-sown Federation is yielding from 40 to 55 bushels an acre.

On the Station threshing is about half completed. Windy weather has interfered considerably with threshing operations. Most of the grains are so short and light that they can not be handled safely in much wind. The following tables show yields obtained in a rate-and-date-of-sowing experiment with Oro winter wheat and in the regular varietal trial with winter wheat.

Acre yield of winter-wheat varieties grown in quadruplicate 1/25th-acre plots at Moro, Oregon, 1931

Variety	C.I. No.	Nursery No.	Yield (Bu. per acre) Series 1	Series 2	Series 3	Series 4	Av.
Fortyfold x Hard Federation	....	964	16.0	19.5	14.7	20.4	17.7
Arcadian x Hard Federation	....	979	13.9	17.3	21.2	17.8	17.6
White Odessa x Hard Federation	....	1003	14.3	17.8	19.9	16.5	17.1
Federation	4734	...	13.0	16.5	19.1	16.9	16.4
Arco	8246	...	13.9	16.5	17.3	17.8	16.4
North Powder Turkey (Sel.)	....	...	13.0	15.6	17.8	19.1	16.4
Hybrid 128 x Fortyfold	....	...	12.1	16.5	19.5	17.3	16.4
Fortyfold x Federation	8247	...	14.3	16.5	18.2	16.0	16.3
P1068 x Preston	8244	...	15.2	16.5	18.2	15.2	16.3
Kanred x Marquis	....	Ks.No. 214214	13.4	14.3	17.8	16.5	15.5
Triplet	5408	...	13.9	15.6	17.3	14.7	15.4
Fortyfold Sel. 29	....	...	11.7	16.5	16.9	16.0	15.3
Kharkof Sel.	8249	...	13.4	14.3	18.6	13.9	15.1
Kanred	5146	...	12.6	15.2	18.2	13.4	14.9
Ridit	6703	...	13.4	13.4	16.5	14.7	14.5
Fortyfold Sel. 43	....	...	10.4	16.9	13.4	16.5	14.3
Turkey	1571	...	13.0	13.9	16.0	13.4	14.1
Turkey (local)	4429	...	11.3	15.2	16.9	13.0	14.1
Argentine	1569-2	...	13.0	15.2	13.4	13.0	13.7
Kharkof	1442	...	13.0	14.3	....	....	13.7
Defiance	....	Ks.No. 373-141	10.0	14.7	16.5	13.0	13.6
Oro	8220	...	10.4	13.4	16.9	13.0	13.4
Hybrid 128	4512	...	8.7	19.5	7.8	9.5	11.4
Fortyfold Sel. 54	....	...	9.5	15.2	8.2	9.5	10.6
White Odessa	4655	...	3.0	10.4	9.1	6.5	7.4

Yield of winter-wheat varieties in a rate-and-date-of-sowing experiment at Moro, Oreg., 1931

Date and Rate of Sowing	Yield (Bu. per acre) Series 1[a]	Series 2	Av.
October 16:			
2 pecks	17.0	20.3	18.7
4 do	18.7	22.0	20.4
6 do	18.7	21.3	20.0
8 do	18.3	20.3	19.3
Av.	18.2	21.0	19.6
October 30:			
2 pecks	19.7	21.3	20.5
4 do	22.3	24.3	23.3
6 do	21.3	24.7	23.0
8 do	23.3	27.0	25.2
Av.	21.7	24.3	23.0
November 13:			
2 pecks	21.0	----	----
4 do	25.7	----	----
6 do	25.0	----	----
8 do	24.7	----	----
Av.	24.1	----	24.1

[a] Plots were 1/20th-acre.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (Aug. 1)

During the first 12 days of July pleasant weather prevailed and crops grew well, especially under irrigation. Beginning with July 13 the temperature rose and the maximums from then to the 30th are as follows: 93, 96, 94, 94, 97,97, 94, 95, 100, 102, 100, 102, 94, 101, 103, 96, and 97 degrees. This is one of the hottest and longest periods of heat officially recorded in Utah. Accompanying this hot spell there has been a drought of 65 days broken by a heavy rain and wind on the 30th. The minimum temperature for the month was 39° F., recorded on the 8th.

The precipitation in July totaled 0.7 of an inch; the average for ten years for July is 0.6 of an inch. The total precipitation since January 1, 1931, is 5.38 inches. The 10-year average from January to August 1 is 10.24 inches.

Crops in general throughout the State have suffered greatly and in many cases are almost a complete failure. Of the cereals, oats and barley have done best under irrigation. Corn has burned even when supplied with water, but sorghums have grown very well.

All small grains, including wheat, oats, barley, and flax, are ripe and in most cases have been harvested. Corn has developed fairly good ears which are in the milk stage at the end of the month. Sorghums are mostly headed out with the exception of Dwarf Hegari, Grohoma, and Freed.

Visitors at the College in July were Messrs. B. B. Bayles, T. R. Stanton, H. V. Harlan, and M. A. McCall, from the Washington office, and a number of men from the eleven western States who came to the meetings of the Western Branch of the American Society of Agromomy.

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Vol. 23 Aug. 20, 1931 No. 19
Personnel (Aug. 11-20) and Field Station (Aug. 1-15) Issue

PERSONNEL ITEMS

Mr. B. B. Bayles returned to Washington on August 17 from a trip to Arizona, California, Idaho, Kansas, Montana, Oregon, Utah, and Washington in the interests of cooperative wheat investigations.

The degree of Ph. D. was conferred upon Arthur A. Bryan by the Iowa State College on June 15, 1931.

Mr. J. A. Clark returned on August 17 from an extended trip in the western wheat-growing area.

Mr. A. C. Dillman returned on August 17 from a western trip in the interests of cooperative flax investigations.

Dr. H. B. Humphrey returned on August 20 from a one-month trip to points in the west.

Mr. J. W. Jones returned on August 12 from a trip to Arkansas in the interests of cooperative rice investigations.

Mr. R. W. Leukel returned on August 17 from a trip to points in the west.

MANUSCRIPTS AND PUBLICATIONS

Galley proof of article entitled "Further Studies on Penicillium Injury to Corn," by Helen Johann, J. R. Holbert, and J. G. Dickson, for publication in the Journal of Agricultural Research, was read on August 11.

Galley proof of article entitled "Inheritance of Type of Floret Separation and Other Characters in Interspecific Crosses in Oats," by Victor H. Florell, for publication in the Journal of Agricultural Research, was read on August 14.

The article entitled "The Experimental Modification of Heredity in Crop Plants. I. Induced Chromosomal Irregularities," by L. J. Stadler, appears in Scientific Agriculture 11(9):557-572, figs. 1-9. May, 1931. (Cooperative investigations between the Division of Cereal Crops and Diseases and the Missouri Agricultural Experiment Station.)

Iowa Agricultural Experiment Station Research Bul. 138 entitled "A Gene Influencing the Composition of the Culm in Maize," by Merle T. Jenkins and Fisk Gerhardt, has been received, bearing date of May, 1931. (Cooperative investigations between the Division of Cereal Crops and Diseases and the Iowa Agricultural Experiment Station.)

The article entitled "The Experimental Modification of Heredity in Crop Plants. II. Induced Mutation," by L. J. Stadler, appears in Scientific Agriculture 11(10): 645-661, figs. 1-6. June, 1931. (Cooperative investigations between the Division of Cereal Crops and Diseases and the Missouri Agricultural Experiment Station.)

The article entitled "Spore Germination of *Puccinia glumarum* with Notes on Related Species," by J. M. Raeder and W. M. Bever, appears in Phytopathology 21(8): 767-789, figs. 1-3. August, 1931. (Cooperative investigations between the Division of Cereal Crops and Diseases and the Idaho Agricultural Experiment Station.)

The article entitled "Correlation between Yields of Winter Wheat Varieties Grown in Various Locations in the Columbia Basin of Oregon," by J. Foster Martin and D. E. Stephens, appears in the Journal of the American Society of Agronomy 23(8): 638-646. August, 1931.

Farmers' Bulletin 1240, rev., entitled "How to Grow Rice in the Sacramento Valley," by Jenkin W. Jones, has been received from the Government Printing Office.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (Aug. 14)

Weather conditions in July were about the same as for July, 1930. The maximum temperature was 97°. A temperature of 90° or above was recorded on 25 days. The minimum temperature was 72°; the highest minimum was 78° on July 1. The total precipitation was 4.63 inches, as compared with a 21-year average of 6.05 inches.

Many of the rices in the nursery are heading, and some have matured seed.

Owing to the light rainfall over most of the rice area, the streams from which irrigation water is obtained have gradually become more salty. In many instances fields have been dry for weeks, and in large areas water has been used that contains sufficient salt either to kill or greatly injure the crop. In the vicinity of Crowley and eastward there has been sufficient rain water to keep streams and fields fresh. This has not been true to the south and west. The water that has fallen in the upper regions has been pumped from the streams before it could reach areas lower down.

In the dry area early maturing rice will be ready for harvest within the next few weeks and probably will produce a normal crop. Rice that is heading now probably will be a total loss in many instances. Late maturing rice, which constitutes the larger portion of the crop, can do without water two or three weeks longer and probably will produce a good crop.

Leaf-spot diseases have increased somewhat and can be found in all fields; however, they have not developed to the extent that they had at this time last year.

Work on the Station has progressed satisfactorily. The rainfall was sufficient and well distributed for all dry cultivated crops.

ARKANSAS

Rice Branch Experiment Station, Stuttgart (Rice Production and Improvement, C. R. Adair) (Aug. 10)

The writer visited the University of Arkansas Experiment Station and attended Arkansas's "Farmers Week", August 3-6, returning to Stuttgart August 6, accompanied by Mr. J. W. Jones.

Some of the early maturing varieties and the first sowings of rice are in full head at this time, and some of the later sowings and midseason varieties are starting to head.

A short trip was taken through Arkansas County, August 9, by Mr. Jones and the writer. A number of the early sown fields were in full head at that time. Although some of the fields are quite badly infested with weeds and grasses the crop as a whole looks very well, with a promise of yields better than the average.

Other crops grown quite extensively in this section, including cotton, corn, and soybeans, look better than average, owing to very favorable weather conditions with plenty of moisture (10.08 inches in July).

GREAT PLAINS AREA (South to North)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins) (Aug. 12)

The mean temperature for the month was approximately normal. The first week was quite hot but this was followed by about 10 days of below-normal temperatures. This hot period caused corn to suffer and yields were lowered considerably. The maximum temperature for the month was 103° and the minimum 66°. There was a total of 2.01 inches of rainfall in July which is only 0.07 of an inch below normal.

The accumulated departure from normal since January 1 is 2.75 inches. Precipitation was in the form of showers and although it helped cotton and row crops for a time, corn was too mature to be helped and other crops were suffering from lack of moisture at the end of the month.

Threshing of field plots and most of the nursery material was completed in July. Yields in the varietal tests are given in tables which follow. In the wheat varietal test, Tenmarq and Prelude x Kanred, C. I. 8886, were first and second, respectively. The quality of grain was outstanding in the case of Prelude x Kanred. A new white winter wheat, developed by a farmer in Bosque County and called White Mediterranean produced a better yield than Denton. The seed was obtained late in the fall and only one plot was sown. The yields are not comparable with the regular varietal test. In the regular test, Nebraska No. 28 and Early Blackhull were damaged and yields reduced by the late spring freeze, so that many heads were sterile.

The yields in the barley varietal test were very erratic, ranging from very high to very low yields. The Finley barley is a local strain similar to the Tennessee Winters but has not been classified. Vaughn barley, the highest yielding variety last year, was the poorest this season.

In the fall oat varietal test there are a number of new Red Rustproof selections which outyielded the standard varieties and show some promise. These were sown in single plots. The spring oat varieties all yielded over 100 bushels per acre but differences between varieties are small.

The office and laboratory rooms have been refinished and new floors laid in the office. The new Heller cabinet equipment has been installed and the variety and nursery grain is being placed in this equipment.

Average yields of winter-wheat varieties grown in five systematically replicated 1/55th-acre plots at Substation No. 6, Denton, Tex., 1931

Variety	C.I.No.	Texas No.	Yield (Bu. per acre)
Tenmarq	6936	----	42.39
Prelude x Kanred	8886	----	41.77
Sutton (local)	----	----	40.38
Kawvale	8180	----	38.69
Denton (checks)	8265	----	38.40[1]
Mediterranean Sel.	----	3015-72	38.20
Fulcaster	6471	----	34.70
Kanred	5146	----	34.69
Kharkof	1442		34.47
Mediterranean Sel.	----	3015-81	34.43
Blackhull	6251	----	34.42
Nebraska No. 60	6250	----	31.87
Harvest Queen	6199	----	28.25
Early Blackhull	8856	----	26.00
Nebraska No. 28	5147	----	6.76

[1] Average of 10 plots.

Mediterranean Sel.[2]	----	5933-32	37.41
Do.	----	8116-12	37.07
Do.	----	5933-20	35.01
Do.	----	5933-34	34.83
Do.	----	5933-38	30.02
Do.	----	5933-23	29.68
Do.	----	5933-36	29.51
Do.	----	5933-7	29.39
Do.	----	5933-35	28.47

[2] Single plots.

White Mediterranean [3]	----	----	45.93
Denton	----	----	43.48

[3] Single plots; later sowing, Acre H (11-20).

Average yield of barley varieties grown in six systematically replicated 1/55th-acre plots at Substation No. 6, Denton, Texas, 1931

Variety	C.I.No.	Texas No.	Yield (Bu. per acre)
Finley	----	----	67.36
Coast	690	15829	58.00
Tennessee Winter	257	15841	45.79
Stavropol	----	15828	44.80
Atlas	4118	15840	39.40
Club Mariout	261	15842	38.21
Vaughn	1367	15830	34.53

Yields of fall-sown oat varieties and strains at Substation No. 6, Denton, Tex., 1931.

Grown in six systematically replicated 1/55th-acre plots

Variety	C.I.No.	Texas No.	Yield (Bu. per acre)
Red Rustproof (Sel.1118-69)	2503	----	88.88
Ferguson No. 922	2150	----	88.66
Appler (Sel.1401-24)	----	----	87.53
Nortex	2832	----	85.88
Fulghum	2500	----	83.61
Do. (699-202)	2498	----	75.66
Frazier	2381	----	69.49

Grown in single 1/55th-acre plots

Red Rustproof (Sel.2805-43)	----	----	108.50
Do.(Sel. 1415-12)	----	----	102.80
Do.(Sel. 985-21)	----	----	100.98
Do.(Sel.985-27)	----	----	100.77
Nortex (check)	2832	----	98.50
Red Rustproof (Sel. 985-17	----	----	92.81
Do.(Sel.985-8)	----	----	87.33
Do.(Sel.985-12)	----	----	85.61

Grown in single 1/110th-acre plots

Red Rustproof (Sel.2805-39)	----	----	120.31
Do.(Sel.2805-36)	----	----	112.37
Do.(Sel.6217-43)	----	----	107.01
Do.(Sel.1415-1)	----	----	103.13
Do.(Sel.6217-27)	----	----	100.99
Do.(Sel.2805-16)	----	----	100.34
Do.(Sel.1415-11)	----	----	89.32

Average yield of spring-sown oat varieties grown in five systematically replicated 1/55th-acre plots at Substation No.6, Denton, Tex., 1931.

Variety	C.I.No.	Texas No.	Yield (Bu. per acre)
Ferguson No. 922	2150	---	111.51
Appler (Sel.1401-24)	----	---	110.34
Red Rustproof (Sel.1118-69)	2503	---	108.58
Nortex	2382	---	106.09
Fulghum (699-202)	2498	---	105.51
Frazier	2381	---	102.25

(August 15)

The temperature of the first two weeks of August have been below normal. A few days have been hot but the nights have been exceptionally cool. A maximum of 101° was recorded on several days. A minimum of 53°, recorded on August 12, is the second lowest temperature ever recorded at the Substation in August. No precipitation was recorded in the first two weeks of August.

Corn is nearly mature and from appearances now will turn out better than expected. Cotton is fruited so heavily that farmers are expecting the biggest crop on record. Many plants have from 20 to 35 well-set bolls. No insect injury has occurred to date. Sorghums are producing a good crop in spite of the drought, but all other forage crops are badly in need of rain.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger) (Aug. 15)

Several showers, totaling 0.98 of an inch, occurred on the first days of August and enabled the sorghums to resume growth. Some of the sorghums are headed and others are heading; several of the earlier varieties are beginning to ripen.

Six plots of broomcorn in the first date-of-seeding experiment were harvested on August 13. Bagging of seed heads has been the main work this month.

The maximum temperature for August to date was 101° on the 7th and 8th; the minimum for the same period was 58° on the 12th.

KANSAS

Agricultural Experiment Station, Manhattan (Cereal Breeding, J. H. Parker) [July 28]

Kawvale wheat has been inspected and approved by the Kansas Crop Improvement Association and about 150 bushels are available for distribution to its members. In a certified seed list of the Association for July, 1931, the following statement is made regarding the new wheat: "Kawvale is a pedigree selection from an eastern soft red winter wheat made at Manhattan in 1918. It is a bearded variety with smooth chaff, long soft to semi-hard kernels. In tests in southeast Kansas, Kawvale has yielded more than Fulcaster and Currell and is more winterhardy than these varieties. Kawvale is also resistant to red leaf rust and shows some resistance to Hessian fly. A defect of Kawvale is the tendency for the grain to shatter. Kawvale is recommended for trial in southeast Kansas and as far north as the Kaw River valley. It is NOT recommended for central and western Kansas."

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (Aug. 17).

Although rain has been recorded on five days so far this month the total has been only 0.72 of an inch, of which 0.40 of an inch fell on the 6th. This relieved conditions considerably but was not equal to the needs. Most sections of the State have reported much heavier precipitation.

Temperatures have been moderate to cool. On the 11th a minimum temperature of 37° was recorded at the bench station and 43° on the table. The highest temperature was 98° on the 14th. The evaporation was 0.426 of an inch for that day, or about twice the average for the period.

Nursery threshing and corn pollinating have been completed. Results of barley varietal tests show the lowest yields ever secured at the Substation since cooperative work was started. On the other hand oats yielded well. Both emerged under difficult conditions this spring, but the oats produced by far the better stand. The tables give the 1931 yields of barley and oats.

Average yield of barley varieties grown in four systematically replicated plots at the North Platte Substation, 1931.

Variety	C.I.No.	Yield (Bu. per acre)
Ezond	5064	23.1
North Platte 18 (Smyrna 280)	5456	21.7[1]
Comfort (short type)	4578	21.5
Sandrel	937	21.1
North Platte 19 (690-25)	5483	20.8[1]
North Platte 1 (check)	5266	20.2[2]
North Platte 4 (690-23)	5488	20.0
Glabron	4577	20.0
North Platte 5 (2126-30)	5510	19.8
Sparton	----	19.8
Trebi	936	19.2
Comfort (tall type)	----	18.8
Six Row	----	18.7
McClymont	2126	18.1
Flynn	1311	18.1
Coast	690	17.7
Arequipa	1256	17.3
Club Mariout	932	16.9
Vaughn	----	14.4

[1] Single plot. [2] Average of the 12 checks.

Average yield of oat varieties grown in four systematically replicated plots at the North Platte Substation, 1931.

Variety	C.I.No.	Yield (Bu. per acre)
Franklin	2892	52.5[1]
Markton x Sixty-Day	2358	51.2[1]
Markton x Sixty-Day	2378	47.5
Markton	2053	47.2
North Platte Sel. 7 (6076-17)	----	43.1
Iogold	2329	42.5
Burt	293	42.5
North Platte Sel. 10 (5220-5)	----	42.2
Nebraska No. 21	841	41.8
Fulghum	708	41.2
Iowar (check)[2]	847	40.9
Burt	2491	39.7
Gopher	2027	39.1
Brunker	2054	39.0
Kherson	459	37.5
Rustproof Sel. (Kans. 5213-7)	2823	35.0

[1] Single plot.
[2] Average of 10 check plots.

The following yields were obtained from the spring-wheat varieties grown in plots.

Average yields of spring-wheat varieties grown in four systematically replicated plots at the North Platte Substation, 1931.

Class and Variety	C.I.No.	Yield (Bu. per acre)
Hard Red Spring		
Progress	6902	23.2
Supreme	8026	23.0
Reliance	7370	22.8
Kota x Marquis 1656.84	8004	22.8
(Kearney Co.) Java	----	22.3
Ceres[1]	6900	22.2
Reward	8182	21.6
Garnet	8181	20.8
Marquis	3641	20.2
Marquillo	6887	19.5
H-44	8177	15.6
Hope	8178	15.1
Durum		
Akrona	6881	21.8
Nodak	6519	20.0
Mindum	5296	18.5

[1] Average of 11 check plots.

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (August 15)

Threshing of wheat has been completed at this Station for some time. Nearly all the nursery yields have been calculated.

Rains and cool weather came in time to insure against a repetition of the corn failure experienced here last year, and indications point toward light to moderate yields.

Comparative nursery yields of the leading winter wheat varieties are given in Table 1, and field plot yields in Table 2. The extremely favorable nursery showing of Blackhull this year and the unfavorable showing of the Nebraska No. 60 checks is of particular interest. In the advanced nursery group of 50 varieties, selections, and hybrids only two yielded less than the mean for the Nebraska No. 60 checks. Variability within the checks was low, so significant statistical superiority could be shown for about 35 of the strains. This unusual and unnatural varietal behavior seems to offer "food for thought" on the desirability of using a single variety in the role of a check (standard for comparison), especially where sufficient replications are used to cover a fair range of soil conditions for each of the strains.

Table 1. Comparative nursery yields of standard winter-wheat varieties grown at the Agricultural Experiment Station, Lincoln, Nebraska, 1931

Variety	C.I.No.	Advanced nursery	Intermediate nursery	Winter hardiness nursery	Date of seeding nursery
		(10 rep.)	(5 rep.)	(3 rep.)	(15 rep.)
Blackhull	6251	33.1	33.2	39.4	37.7
Tenmarq	6936	--	--	43.2	36.5
Kharkof (Hays No.2)	6686	--	--	--	35.0
Kanred x Prelude	8886	--	--	41.0	34.9
Oro	8220	--	--	38.8	34.1
Cheyenne	8885	31.5	34.8	43.7	33.8
Kanred	5146	--	35.9	38.6	33.7
Kharkof	1442	--	--	39.4	33.2
Minturki	6155	30.5	34.8	36.8	30.4
Nebraska No. 60	6250	26.3 1/	30.5 1/	39.2	30.4 1/

1/ Used as a check every sixth plot. Figure given as an average for all check plots in the group.

Table 2. Field plot yields of the uniform winter-wheat varietal series grown at the Agricultural Experiment Station, Lincoln, Nebr., 1931. [Data supplied by Dr. T. A. Kiesselbach].

Variety	C.I.No.	Yield in bushels per acre Average of 3 replications
Kanred	5146	46.7
Cheyenne	8885	48.8
Oro	8220	44.9
Minturki	6155	41.5
Nebraska No. 60 (check)	6250	44.3
Tenmarq	6936	49.2
Kharkof	1442	45.7
Kharkof (Hays No.2)	6686	45.3
Blackhull	6251	45.2
Nebraska No. 60 (check)	6250	43.8
Kanred x Prelude	8886	43.8

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (Aug. 17)

Wheat, oat, and barley varieties in plots are harvested and threshing will start today.

Nursery harvesting also is completed. Threshing of the nursery material will start August 19.

Mr. J. Allen Clark and Dr. H. B. Humphrey were in Mandan from July 31 to August 8 to study some F_3 inheritance material. Stem-rust notes were taken on the individual plants of five wheat crosses involving the varieties Hope, H-44, Supreme, Ceres, and Power. Rust infection was fairly satisfactory and some interesting data were obtained.

Mr. T. R. Stanton was a Station visitor on August 15.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (Aug. 15)

The weather has been comparatively cool so far this month with the exception of a few days. The maximum temperature was 94° recorded on the 13th, and the minimum was 44° on the 10th. Rain was recorded on seven days, totaling 2.02 inches.

The rains and cool weather have greatly benefited late-sown crops and pastures, although coming too late to save the bulk of the crops in this district. Corn is in better than average condition and with favorable weather should mature before the average date for killing frost, (September 14).

All varietal plots of cereal grains have been harvested except the last date-of-seeding experiment with flax and Nodak wheat, and also the plots of proso. The latter are better than usual and should give fair yields. The nursery is harvested with the exception of late varieties of proso and part of the hybrid smut nursery.

The threshing of rotation plots was begun today and threshing of varietal plots of cereal crops is expected to begin early next week.

Official visitors at the Substation this month included Dr. K. S. Quisenberry and Mr. T. R. Stanton, Division of Cereal Crops and Diseases; Dean H. L. Walster and Dr. H. H. Flor, Agricultural Experiment Station, Fargo; Supt. C. H. Plath, Hettinger Substation; and Supt. Victor Sturlaugsen, Landgon Substation.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) [Aug. 15]

Light showers on the first three days of the month came in time to slow up the ripening of wheat somewhat and cool nights also have been favorable to normal filling of the grain. In general, moisture and temperature conditions throughout the season have been such that a maximum filling of wheat may be expected, considering the deficiency in seasonal rainfall. Yields in the community will be light, although not so low as in the greater part of the State.

Rust has been nearly as plentiful as in 1930 in spite of the drought, but rust damage will not be so severe as in 1930 because early rust conditions were not so favorable this year and the grain did not have such a heavy growth of straw.

Common wheats in both nursery and varietal plots have been harvested and durums are now ready. Considerable inheritance material is also coming on for study.

Station visitors in the past two weeks included Messrs. Leukel, Harrington, Macindoe, Clark, Salmon and Humphrey.

IDAHO

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) [August 19]

The weather for the past two weeks has been very favorable for harvesting plots and nursery rows and good progress has been made along this line. The winter wheat, barley, and oat nurseries have been threshed and only a few spring-wheat plots remain to be cut. Plot threshing will start by August 20.

Karmont winter wheat has been sown in plots on three dates, July 15, July 29, and August 12 with good emergence.

Dr. K. S. Quisenberry arrived on August 2 and spent 12 days at the Station preparing seed for the uniform winter-hardiness and smut nurseries. Dr. H. A. Rodenhiser spent parts of two days (August 12-13) at the Station in the interest of smut experiments.

The temperatures were: maximum 92° August 11, minimum 40° August 7-8, and mean 43°. The precipitation totaled 0.15 of an inch.

WESTERN BASIN AND COAST AREAS (North to West and South)

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin) (Aug. 15)

The maximum temperature for July at the Pendleton Field Station was 107° F. The temperature rose to 99° F. on three different days in August. However, in all cases the nights have been cool. There has been no precipitation since June 27, when 0.06 of an inch of rain fell.

Threshing operations were completed August 8. Yields on the Station have not been calculated, but farmers in the vicinity report yields of from 35 to 50 bushels per acre. Bunt was prevalent in most of the fields this year, and many farmers have had to take considerable dockage.

The percentages of bunt in 25 winter-wheat varieties inoculated with 10 collections and a composite sample are given in Table 2. Each percentage is the result of a count of heads in a single rod row. Nearly all the Turkey-type varieties in the experiment showed considerable resistance. The species and source of each collection used are listed in Table 1.

Table 1. Identification, predominating species, and source of bunt collections used in inoculating winter-wheat varieties at the Pendleton Field Station, Pendleton, Oreg., 1931

Collection No.	Species and source		
A	Composite of 10 collections		
1 c	T. laevis	from	Corvallis, Oreg.
1 d	T. tritici	"	" "
1 e	"	"	" "
7 a	"	"	Pendleton, Oreg.
8 b	T. laevis	"	Pullman, Wash. (Albit)
9	"	"	Heppner, Oreg.
6 a	T. tritici	"	Morrow Co., Oreg.
23	T. laevis	"	Indiana
53	T. tritici	"	Ione, Oreg.
75	"	"	Craigmont, Idaho

Table 2. Percentage of bunt in winter-wheat varieties inoculated with 10 collections and a composite sample at the Pendleton Field Station, Pendleton, Oreg., 1931

Variety	C.I. No.	Nursery No.	Form of Bunt A	1c	1d	1e	7 a	8b	9	6a	23	53	75	Av.
Hoenheimer No. 77	----	----	0	0	0	0	0.6	0.3	0	2.6	0	2.0	2.0	0.7
Crimean	1532	----	3.5	4.6	3.6	4.0	3.2	1.6	2.0	1.6	2.0	1.9	2.9	2.8
Oro	8220	----	2.2	3.8	3.5	1.5	2.8	7.2	4.5	2.1	1.0	1.8	6.3	3.3
Turkey	7366	----	3.8	5.1	5.8	5.1	4.6	4.2	4.6	2.3	2.8	4.7	2.8	4.2
Argentine	10061	----	6.6	8.8	7.0	4.5	7.3	7.3	5.6	4.9	5.6	7.9	6.0	6.5
Turkey x Bd. Minn.No.48	8243	----	7.4	8.0	---	---	---	10.6	13.5	7.3	6.9	11.5	7.0	9.0
Turkey	1558A	----	18.0	13.1	18.1	8.3	7.7	7.1	31.6	5.2	3.1	8.3	8.7	11.7
Ridit	6703	----	12.4	15.3	3.8	6.5	10.5	12.4	15.4	3.4	4.7	21.1	37.6	13.0
Turkey x Florence	----	935	18.4	16.8	7.7	3.5	5.5	22.7	11.2	4.3	2.5	29.8	31.2	14.0
Turkey x Florence	----	933	10.7	20.4	7.4	5.8	8.8	23.8	18.1	4.6	7.9	22.0	28.9	14.4
Turkey[1]	1558A	----	14.4	6.5	15.4	14.7	24.6	16.6	21.9	9.6	10.2	17.1	22.4	15.8
Turkey Sel.	----	1178	20.5	18.9	16.8	25.7	22.7	16.3	18.5	12.4	24.9	20.8	19.9	19.8
Turkey x Florence	----	934	30.8	23.6	20.2	12.6	26.3	34.6	25.3	11.5	7.6	41.1	41.4	25.0
Turkey-Hybrid 128 x) Turkey-Florence)	----	947	29.5	42.2	2.3	8.0	9.3	51.3	30.0	6.2	2.2	46.3	59.7	26.4
Turkey x Florence	----	932	31.7	43.8	10.0	11.3	29.5	48.1	30.8	10.8	6.2	37.1	43.5	27.5
Turkey-Hybrid 128 x) Turkey-Florence)	----	946	42.5	63.5	31.1	14.5	22.6	63.7	33.2	25.6	11.1	61.5	88.0	41.6
Hussar	4843	---	66.8	75.8	22.1	28.5	69.4	67.7	74.8	1.6	27.1	51.3	15.6	45.5
Martin	4463	---	96.0	---	---	---	---	---	---	40.3	86.2	92.0	38.6	70.6

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[1] Selection from Corvallis, Oreg.

Table 2. (Cont'd)

Variety	C.I. No.	Nursery No.	Form of Bunt A	1c	1d	1e	7a	8b	9	6a	23	53	75	Av.
Hard Fd. x Hussar	----	1009	84.9	94.0	73.9	90.0	90.0	92.0	78.0	24.9	85.0	57.0	58.2	75.3
Kharkof	8249	--	87.2	80.9	70.2	72.6	92.0	92.0	82.2	64.4	69.6	74.6	90.0	79.6
Regal	7364	--	76.8	95.0	85.0	72.6	92.0	92.6	90.0	30.6	95.0	90.0	---	82.0
Albit	8275	--	98.0	95.0	95.0	96.0	95.0	95.0	93.0	48.7	95.0	92.0	65.5	88.0
Sherman	4430	--	99.0	95.0	98.0	95.0	90.0	95.0	90.0	69.4	90.0	95.0	78.7	90.5
White Odessa	4655	--	98.0	96.0	95.0	99.0	96.0	98.0	99.0	59.5	95.0	95.0	85.0	92.3
Hybrid 128	4512	--	95.0	97.0	95.0	97.0	99.0	95.0	95.0	92.0	95.0	92.0	95.0	95.2

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens) (August 7)

The hottest weather of the year occurred in the first week of August, the maximum temperature reaching 99° on August 1. The hot weather was of short duration, however, and it is now much cooler. The maximum temperature yesterday was only 75°.

Threshing on the Station is completed. The following tables give the results obtained this year in the varietal experiments with spring wheat, spring barley, and oats.

Average yield of spring-wheat varieties grown in triplicate 1/20th-acre plots at the Sherman County Branch Station, Moro, Oreg., 1931

Variety	C.I. No.	Yield (Bu. per acre)
Onas	6221	21.9
Baart x Federation	8252	21.8
Baart x Federation	8254	21.5
Baart	1697	21.5
Pacific Bluestem	4067	20.4
Hard Federation Sel. 82	--	20.0
Hard Federation Sel. 79	--	19.6
Hard Federation	4733	19.4
Hard Federation Sel. 71	8256	19.3
Marquis	4158	18.7
Federation	4734	18.5
Hard Federation Sel. 31	8255	18.5
White Federation	4981	18.4
Average	--	20.0

Average yield of spring-barley varieties grown in triplicate 1/20th-acre plots at the Sherman County Branch Station, Moro, Oreg., 1931

Variety	C.I. No.	Yield (Bu. per acre)
Barley		
Peruvian	935	29.2
Flynn	1311-1	27.5
Arequipa	1256	27.4
Club Mariout	261	27.3
Meloy	1176-3	26.2
Trebi	936	25.8
Atlas	4118	23.6
Pryor	1429	23.5
Chevalier	1419	22.8

Average yield of oat varieties grown in triplicate 1/20th-acre plots at the Sherman County Branch Station, Moro, Oreg., 1931

Variety	C.I. No.	Yield (Bu. per acre)
Richland	787	34.6
Threegrain	1950	34.4
Iogold	2329	33.9
Sixty-Day	165-1	33.7
Markton	2053	32.7
Western Wonder	1951	32.5
Siberian	655	28.2
Swedish Select	134-1	27.7

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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 August 31, 1931 No. 20
Personnel (Aug. 21-31) and General Issue

PERSONNEL ITEMS

Mr. F. A. Coffman returned to Washington on August 25 from a 6-week trip to points in the west in the interests of cooperative oat investigation.

Dr. J. A. Faris returned to Washington on August 21. He spent most of the summer in the field, making a survey of the cereal smut situation and organizing a research program with cooperating agencies.

Dr. A. G. Johnson returned to Washington on August 23 from a 7-week western trip in the interests of cereal diseases.

Mr. J. W. Jones left Washington on August 31 for points in Louisiana, Texas, California, Missouri, and Arkansas in the interests of cooperative rice investigations.

Mr. C. H. Kyle left Washington on August 24 for points in Georgia, Louisiana, Tennessee, North Carolina, and South Carolina, where he will obtain harvest data on corn experiments and confer with cooperating officials.

Miss M. L. Martini returned to Washington on August 28 from a 3-month trip to Idaho where she took notes on cooperative barley experiments.

Dr. K. S. Quisenberry returned on August 25 from travel in Texas, New Mexico, Oklahoma, Kansas, Nebraska, and Colorado, in the interests of cooperative wheat experiments. Dr. Quisenberry was in the field since May 31.

Mr. T. R. Stanton returned to Washington on August 21 from an extended field trip in the interests of oat investigations. After reporting from Lansing, Mich., on July 5, Mr. Stanton returned to Ames, Iowa, where the period from July 6 to 18 was spent assisting in harvesting the cooperative oat nurseries. Marked progress was made in the isolation of crown- and stem-rust-resistant material from various hybrids. The poor condition of the oats resulting from the intensely warm weather of late June made it possible to eliminate much more undesirable material than would have been possible if weather conditions had been more favorable.

From Ames Mr. Stanton proceeded to Utah and Idaho. Some of the smut-resistant selections from the Markton x Idamine, Markton x Victory, Markton x Swedish Select, etc., crosses appeared to be of considerable promise under the environment of Logan. On the whole, the oat nursery was in excellent condition.

At Aberdeen, oats in general were less vigorous than in most previous years. Color of lemma did not develop fully in all varieties. Owing to unfavorable conditions last spring the crop was sown a little later than usual but because of the extremely warm summer, the warmest ever experienced in that section, it ripened earlier than usual. Some of the new reselections for smut resistance from various crosses on Markton were quite uniform in plant characters and of excellent kernel color. Mr. Stanton described several valuable new varieties of oats introduced from Australia and Mr. Coffman made many observations on the inheritance of color in Avena.

En route to Washington, Mr. Stanton made official stops at Bozeman, Mont., Dickinson, Mandan, and Fargo, N. Dak., St. Paul, Minn., Madison, Wis., and Chicago, Ill.

MANUSCRIPTS AND PUBLICATIONS

43 A manuscript entitled "The Relation of the Semipermeable Membranes of the Wheat Kernel to Infection by Gibberella saubinetii," by Grace Wineland Pugh, Helen Johann, and James G. Dickson, was submitted on August 31 for publication in the Journal of Agricultural Research.

Galley proof of Technical Bulletin No. 260 entitled "Results of Seed-treatment Experiments with Yellow Dent Corn," by James R. Holbert and Benjamin Koehler, was read on August 5.

Galley proof of Technical Bulletin No. 266 entitled "Morphologic and Physiologic Studies on Stem-rust Resistance in Cereals," by Helen Hart, was read on August 21.

Galley proof of the article entitled "A Study of Certain Characters in Wheat Back Crosses," by Victor H. Florell, for publication in the Journal of Agricultural Research, was read on August 26.

Galley proof of the article entitled "Influence of Humidity on Floral Infection of Wheat and Barley by Loose Smut," by V. F. Tapke, for publication in the Journal of Agricultural Research, was read on August 29.

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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 September 10, 1931 No. 21
Personnel (Sept. 1-10) and Field Station (Aug. 16-31) Issue

PERSONNEL ITEMS

Mr. O. S. Fisher returned to Washington on September 1 from an extended trip in a number of western States in the interests of cooperative extension agronomy. He left again on September 6 for a short stay in Chicago.

Dr. H. V. Harlan returned on September 5 after having been in the field since April 15 in the interests of cooperative barley research.

Mr. M. A. McCall returned to Washington on September 4 after nearly seven weeks travel in the Middle West and on the Pacific Coast looking after cooperative cereal investigations. On September 9 Mr. McCall left again for a 2-weeks trip in Missouri, Kansas, and Nebraska to confer with officials of agricultural experiment stations and employees of the Division regarding cooperative cereal experiments.

Mr. S. C. Salmon, recently appointed principal agronomist in charge of wheat investigations, came to Washington on September 2 after having completed field travel in wheat areas of several western States.

MANUSCRIPTS AND PUBLICATIONS

Galley proof of article entitled "Parasitism of Gibberella saubinetii on Corn Seedlings," by Norma L. Pearson, for publication in the Journal of Agricultural Research, was read on September 8.

Galley proof of Farmers' Bulletin 1679 entitled "Pop Corn," by Arthur M. Brunson and Carl W. Bower, was read on September 10.

A brief article entitled "Giving Scientific Advice to Producers of Grain," by M. A. McCall, appears in the United States Daily [Washington, D.C.], vol. 6, no. 129, p. 1274, August 3, 1931.

WESTERN SECTION OF THE AMERICAN SOCIETY OF AGRONOMY

Members of the Western Section of The American Society of Agronomy met as guests of the Utah Agricultural College at Logan, Utah, on July 9. Agronomists were present from Idaho, Oregon, California, Utah, Wyoming, and Colorado. Following the roll call an address of welcome was given by President E. G. Peterson of the Utah Agricultural College, to which a response was made by Alvin Kezer, President of the Western Section of the American Society of Agronomy.

The remainder of the morning and early part of the afternoon were given over to the presentation of papers. The remainder of the afternoon was spent in a tour of the experimental plots of the Agronomy Department which were briefly discussed by members of the staff.

An interesting talk on the development and problems of the Utah Farm Villages was given by P. V. Cardon, Director of the Utah Agricultural Experiment Station, at the evening session. Following this Prof. D. W. Pittman gave an illustrated talk on his observations at the Second International Congress of Soil Science and his trip through Russia.

July 10 was spent on a tour of Cache Valley, Juab Valley, Bear River Valley, and other agricultural valleys between Logan and Nephi, and of the experimental plots at the Nephi Dry-Farm Substation, where dry-farm experiments have been conducted for more than a quarter of a century. On the trip from Logan to Nephi stops were made at the Davis County Substation, the Mormon Tabernacle at Salt Lake City, where a special organ recital was given for the visiting agronomists, the sugar beet experiments at Salt Lake City, conducted by the United States Department of Agriculture, and the Brigham Young University at Provo, where luncheon was served.

On July 11 many interesting papers were presented at the session held in the high school building at Nephi. Mr. and Mrs. A. F. Bracken served a chicken dinner at their cabin in Salt Creek Canyon in the evening. Following the dinner William Bailey, former President of the National Tax Association, gave a short talk on Research in Taxation, and Alvin Kezer delivered the President's address.

The 1932 meetings will be held at Laramie, Wyo. Mr. A. F. Bracken, Superintendent of the Nephi Dry-Farm Substation, was elected President, and Glenn Hartman, University of Wyoming, Laramie, Secretary, for 1932.

The following are the titles of papers presented at the meeting on July 11 by members of the Division of Cereal Crops and Diseases:

Tillage Practices in Wheat Growing on the Dry Lands of the Western United States, by D. E. Stephens.

New Types of Wheat-Rye Hybrids and their Possible Uses, by V. H. Florell.

Straw-Breaking Studies on the Registered Improved and Other Oat Varieties at Aberdeen, Idaho, by L. L. Davis and T. R. Stanton.

Artificial Refrigeration as a Means of Determining the Resistance of Certain Spring Wheats to Frost, by J. Foster Martin.

Date of Seeding Experiments with Winter Wheat at Moccasin, Montana, by B. B. Bayles.

Root Studies of Wheat, by D. E. Stephens.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

State College of Agriculture, Athens, (Cereal Agronomy, R. R. Childs)(Aug. 3)

Average acre yields of winter-oat varieties grown in replicated plots at the Georgia State College of Agriculture, Athens, Ga., 1931

Variety	C.I.No.	Acre yield Bu.	Weight per bu. Lbs.
Fulghum (Coker)	---	118.6	34
Fulghum (100-5-8)	---	111.7	33
Kanota	839	102.3	34
Appler (200-10)	---	96.8	36
Fulghum (699-2011)	2499	96.7	36
Custis	2041	95.6	35
Lee	2042	93.5	36
Burt (25-3)	---	92.7	36
Texas Red Rustproof (250-11)	---	90.5	34
Hasting (325-1)	---	87.5	35
Bancroft (225-19)	---	83.9	34
Norton	2501	79.6	37

HUMID MISSISSIPPI VALLEY AREA (South to North)

ARKANSAS

Rice Branch Experiment Station, Stuttgart (Rice Production and Improvement, C. R. Adair) (G. H. Banks) (July 6)

Yields of winter-oat varieties and strains grown in triplicated field plots at the Rice Branch Experiment Station, Stuttgart, Ark., 1930-31. [Sown Oct. 11, 1930; superphosphate applied at the rate of 300 lbs. per acre on Oct. 9, 1930.]

Variety	C.I.No.	Av. acre yield Bu.	Test weight per bu.(lbs.)
Ferguson No. 922	2150	112.8	35.9
Ferguson No. 71	844	109.4	34.7
Nortex	2382	105.7	33.9
Fulghum (Winter Form)	2499	103.9	35.7
Do Do	2500	103.9	35.0
Appler	1815	102.8	34.7
Fulghum	708	98.7	36.0
Kanota	839	98.3	35.0
Custis	2041	96.9	36.1
Spören Gray Winter	2506	96.4	35.1
Lee[a]	2042	94.7	35.7
Arkansas No. 12	----	93.7	34.2
Winter Turf	----	91.6	33.9
Arkansas No. 19322	----	91.4	34.4
Arkansas No. 1992	----	90.6	34.8
Frazier	2381	89.6	35.6
Arkansas No. 1	----	87.7	35.4
Arkansas No. 6	----	87.5	35.3
Winter Turf	541-4	84.6	33.9
Hairy Culberson	2505	81.8	36.4
Arkansas No. 15	----	70.6	35.0

[a] Average of 13 check plots.

GREAT PLAINS AREA (South to North)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)[Sept. 5]

The subnormal temperature continued in August. Temperatures during the day were high at times but the nights were very cool. The mean temperature for August was 81.9° F., which is 1.5° below normal. The maximum was 101°, while the minimum of 53° is the second lowest minimum recorded for August at Substation No. 6. The monthly mean accumulated departure from normal since January 1 is 7.3° below normal. The rainfall for August was 2.48 inches, which is 0.62 of an inch below normal. The accumulated departure from normal since January 1 is -3.37 inches.

All threshing has been completed and weights of grain have been recorded. Yields are being computed in order that plans may be made for fall seeding.

The yields in the varietal experiment at Amarillo and in the cooperative experiments with farmers in the Texas Panhandle have been computed and are shown in the accompanying tables. Tenmarq and Prelude x Kanred, C.I. 8886, produced the highest yields at Amarillo, and Tenmarq produced the highest average yield in the cooperative experiment.

Dr. K. S. Quisenberry was a visitor on August 24.

Yield of Wheat Varieties Grown in Quadruplicated Plots at the Price Memorial College, Amarillo, Texas, 1931.

Variety	C. I. No.	Yield (Bu. per acre)
Tenmarq	6936	16.39
Prelude x Kanred	8886	15.37
Kawvale	8180	14.92
Blackhull	6251	14.61
Kanred	5146	13.49
Kharkof	1442	13.48
Denton	8265	12.81
Fulcaster	6471	12.69
Nebraska 60	6250	11.12
Harvest Queen	6199	10.93
Nebraska 28	5147	10.27

The varieties were sown October 22, 1930, with a deep furrow drill, at the rate of 30 pounds per acre. Each plot was 1-drill strip in width and 400 feet long. Uniform stands were obtained. The yields were calculated by harvesting five 16-foot drill strips from each plot.

Yields of wheat varieties grown in cooperative experiments with farmers in the Texas Panhandle, 1931

County	Cooperator	Kanred	Blackhull	Tenmarq	Cert. Turkey	Vaughn Turkey	Kelichor Russian	Denton
		Variety and Yield (Bu. per acre)						
Hale	Lookview Farm	4.87	4.37	1.65	1.37	3.51	1.20	1.37
Hale	J. P. McGarr	5.91	5.18	7.37		6.65		
Swisher a/	J. T. Corder	24.63	23.48	24.39	25.41	25.54	24.37	18.78
Swisher	A. A. Vaughn	17.34	18.81	18.18	11.52	12.51	9.33	12.03
Randall b/	James Lovell	3.38	7.13	4.37	5.33	3.99	6.27	2.78
Potter	Price Memorial College	13.49	14.61	16.39				12.81
Deaf Smith	Ky Lawrence	18.06	18.51	22.47	17.70	21.42	17.73	16.47
Oldham	Byron Gist	8.50	15.15	15.84	5.83		11.62	12.45
Armstrong	M. B. Duke	27.46	23.90	25.78	20.88	29.55	26.71	21.87
Armstrong	D. L. Adams	24.82	24.34	25.65	20.64	17.73	24.62	18.48
Hartley	J. W. McLaughlin	16.40	22.99	18.41	21.15	20.57	18.67	17.18
Gray	Jay Evans	18.45	22.47	20.55	21.86	22.54	21.27	19.11
Hansford c/	R. V. Converse	5.95	12.63	10.39	7.80	9.82	5.90	7.97
Ochiltree b/	E. W. Rogers	6.38	15.65	8.90	8.13	6.84	11.28	8.38
Ochiltree	J.B. Cartwright	10.36	11.59	13.92	10.84	11.59	11.59	10.97
Ochiltree	Oscar Flowers	15.75	16.53	16.34	15.34	15.27	14.20	10.88
Average (all comparable tests)		15.85	17.07	17.46	15.69	16.99	16.48	14.37
Average (10 tests where all varieties are included)		17.81	18.70	18.73	16.67	18.02	16.97	14.71

a/ Seeded in 28-inch rows.
b/ Stands so thin and irregular that yields are not comparable. Not included in averages.
c/ Stands uneven and yields not comparable. Also sown in blocks instead of drill strips.

Tenmarq, a new variety produced by the Kansas Agricultural Experiment Station, produced the highest average yield. It ranked first in six experiments and second in two experiments. Blackhull produced the second highest average yield and ranked first in four experiments and second in five experiments. Denton produced the lowest yield in nearly all experiments and appears to be poorly adapted to the Panhandle section. Kanred was at a disadvantage in nearly all experiments in that the stands were poor in most cases.

Wheat sown in 28-inch rows on J. T. Corder's farm produced yields equal to those obtained by drill seeding, but wheat sown in 36-inch rows produced much lower yield than those obtained by drill seeding. These were only single experiments, and more data are necessary before recommendations can be made regarding this method of seeding.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger) [Sept. 3]

The weather of the last half of August continued dry. Grain sorghum and broomcorn have developed in a shorter period than usual. Stalk growth is short.

Broomcorn of the two earlier dates in the date-of-seeding varietal experiments has been harvested. Eleven of the 19 varieties of grain sorghums of the early date were harvested last week.

Dr. J. H. Martin is visiting the Station this week.

Maximum temperature for last half of August, 105° on the 26th; minimum, 51° on the 29th. Precipitation, 0.60 of an inch in five measurable showers, or a total of 1.53 inches for August.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (Sept. 3)

The past two weeks have been occupied largely with making corn-stand and natural-crossing counts.

There is a very local area around North Platte, including the Substation, that has been missed by nearly every shower this month. On August 7, 0.40 of an inch relieved the drought temporarily, but since that time only 0.13 of an inch has been recorded and that on four different days. Although the subsoil moisture accumulated last fall was as great as ever known, it has been exhausted and rain is needed before winter wheat seeding.

While the moisture situation is not quite so acute over most of this section of the State, frost has been reported in the northeast corner of Lincoln County and a heavy hail caused some severe injury in a neighborhood about 50 miles west. The lowest temperature recorded on the table was 46° on the 29th. It was 37° on the bench the same morning. If frosts do not occur within two weeks, the corn in the irrigated varietal experiment will be mature enough to give some fairly reliable results.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden) (Sept. 5)

Work on the station has been making rapid progress as a result of favorable weather. Harvesting and threshing of both nursery and field plots has been done for some time. The grain samples are now being weighed and yields and test weights determined. There will be some good data in spite of the unfavorable year.

The weather continues dry and hot. There has been no precipitation of real value since June 30, but maximum temperatures have lately been running below 100°, which is a big relief.

The winter-wheat nursery and field plots probably will not be sown until quite late this fall unless there are some good rains and a killing frost soon. There is not sufficient moisture to germinate the seed. Furthermore, the numerous crickets and grasshoppers would be almost certain to destroy any new growth that started before a killing frost.

The corn ear crop on farms around Redfield is almost a complete failure -- just a few nubbins in the low spots. Most of the crop is being cut for fodder. Some farmers are cutting around the low spots and saving them for seed. Every nubbin counts this year. Very little plowing is being done - no feed for horses - no money for gas - no credit at the banks.

Great numbers of livestock are being shipped out of the dried-out areas as a result of the feed shortage. Considerable shes stuff and calves will be carried through the winter in the eastern sections of the State where feed is available and then shipped back to the ranges in the spring. Large quantities of feed grain are also reported being shipped from western Minnesota and some sections of eastern South Dakota into the dried-out areas of the State. An open winter so that livestock can rustle will be a great blessing this year.

It will be a hard winter at best for most of the rural population, but they are making the best of it. In some sections even the grasshoppers are being harvested by special machinery and stored for poultry and hog feed. One farmer about 50 miles west of here informed Mr. McFadden that he converted his sweep rake into a hopper catcher and harvested thirty bushels of hoppers per acre from his alfalfa field during the summer. He was feeding them to his hogs, and thought that they had a feeding value about equal to tankage.

An old fashioned prairie schooner hauled by a team of mules and headed back East passed the station yesterday. It had a modern touch in that it was mounted on an automobile chassis.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (Sept. 1)

The weather of the last half of August, with the exception of three rains which totaled 0.37 of an inch, has been very favorable for harvesting.

Wheat, oats, and barley from varietal plots have been threshed. The yields per acre have not yet been computed. However, pounds of grain per 50th-acre plot show that Reliance Sel. No. 22, C. I. 8384, was the highest yielding of the 20 wheat varieties. A Green Russian selection, C. I. 2344, was the highest yielding of 12 oat varieties, and Glabron barley, C. I. 4577, yielded the highest of eight barley varieties.

Nursery threshing will be completed September 2.

Wet weather during the early part of August caused 50 to 60 per cent of germination in several wheat varieties in plots. Some germination was also noted in nursery material. Several heads germinated while standing in rows previous to harvest.

Mr. M. A. McCall was a station visitor on August 25 and 26.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (Sept. 2)

The weather in August was generally favorable for harvesting. Only 1.01 inches of precipitation were recorded. A prolonged cloudy, rainy period early in the month caused considerable damage to harvested grain from sprouting in the shock. Flax was not damaged in this way because none of it was ready to harvest at that time.

Flax plots sown in the date-and-rate-of-seeding-and-tillage experiment April 20 and April 30, consisting chiefly of Russian thistles and practically no flax, were mowed August 14. The crop from three square-yard areas in each plot was retained for estimating numbers and air-dry weights of weeds and yield of flax, if any, per acre. Plots sown May 9, which contained considerable flax, were harvested August 14 with the binder; great difficulty was experienced on account of the heavy growth of Russian thistles. Plots sown May 20, containing good flax and very few weeds, were harvested August 18. Plots sown May 29, also containing good flax and few weeds, were harvested August 28. Plots sown on the latest date, June 10, probably will not be ready to harvest until about September 15. The early varieties in varietal plots were harvested August 18 and the remainder August 28. The plots of safflower are not yet ripe.

Harvest of flax nursery rows sown May 5 was completed May 29. Most of the flax in nursery rows, reseeded late in May and early in June, is ripening but will not be ready to harvest for some time.

A period of continuous cloudy weather early in August and heavy dews throughout the month apparently favored the development of rust and pasmo. Rust has become prevalent, and susceptible flax varieties are heavily rusted. Progenies from rust-free plants selected last year are generally rust free to date. Considerable pasmo was noted in plots and nursery rows the latter half of August. A disease characterized by dark brown blotching and drying of the leaves, noted in previous years on Burbank flax and varieties from India, is very conspicuous on the rust-free Indian variety No. 68. The disease is apparently as severe though less conspicuous on Burbank flax and rust-susceptible varieties from India, of which the leaf surfaces are practically covered with rust.

Many disease-free progeny rows in the flax-sick soil nursery appear especially promising.

The maximum temperature in August was 99° on August 4 and the minimum, 42° on August 29.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (Sept. 2)

Dry weather has prevailed during the latter half of August, and harvest and threshing operations have proceeded without interruption from the weather except for one windy day. The threshing of flax and proso varieties yesterday ended the threshing of cereal plots except for the June 10 seeding of flax. Nursery threshing was completed last week except for the seed treatment experiment with flax which is not yet ripe.

Yields of all cereal varieties grown in plots were very low, being sown on corn land. Yields from the nursery, which was sown on fallow, were somewhat better.

The corn varieties evidently will yield better than usual and are beginning to ripen.

The yields obtained from the spring-wheat varieties grown in plots are shown in the following table.

Mr. M. A. McCall visited the Substation on August 24.

Acre yields of spring-wheat varieties grown in quadruplicated 56th-acre plots at the Dickinson Substation, 1931

Group and Variety	C. I. No.	Yield (Bu. per acre)
Hard Spring		
Marquis x Kota (1656.97)	8005	7.8
Hurdsfield	8379	7.3
Marquis x Kota (1656.84)	8004	7.1
Kota	5878	7.0
Preston	3081	6.7
Reliance Sel. 22	8384	6.4
Ceres	6900	6.3
Marquis x Kota (1656.48)	10014	6.1
Montana King	8878	5.9
Red Fife	3329	5.8
Reliance Sel. 16	----	5.6
Reliance	7370	5.3
Power	3697	5.3
Marquis	3641	5.0
Haynes	2874	4.9
Supreme	8026	4.4
Hope	8178	4.3
Renfrew	8194	3.7
Minnesota No. 2303	10003	1.5
Marquillo	6887	1.5
Reward	8182	1.0

Group and Variety	C. I. No.	Yield (Bu. per acre)
Durum		
Kubanka Sel. 132	8383	6.1
Mondak	7287	5.9
Pentad	3322	5.2
Nodak	6519	4.2
Kubanka	1440	3.8
Monad	3320	3.6
Mindum	5296	3.2
Akrona	6881	3.1

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (Sept. 1)

Nursery threshing is well under way. Yields run from 15 to 35 bushels per acre, with the average around 25 bushels. The uniform winter-hardiness nursery was sown August 31.

Threshing operations about Langdon are progressing rapidly because of favorable weather. A rain of 1.42 inches the last week of August stopped threshing for several days. Conditions otherwise have been favorable throughout the harvesting and threshing season.

The precipitation for the month totalled 2.57 inches. A maximum of 97° and a minimum of 36° have been recorded. Eighty-seven days have passed since the last killing frost. This is of interest because the average frost-free period is 85 days.

Messrs. M. A. McCall and H. H. Flor were visitors at the Substation during the past two weeks.

The yields from the spring-wheat varietal plots are listed in the following table.

Yields of spring-wheat varieties grown in triplicated 1/60th-acre plots at the Langdon Substation, 1931

Variety	C.I.No.	Yield (Bu. per acre)
Common Wheats		
Marquis x Kota 1656.84	8004	25.7
Double Cross Minn. 2303	10003	23.8
Marquis x Kota 1656.85	8385	23.5
H-44	8177	22.5
Ceres	6900	22.1
Double Cross Minn. 2305	10005	21.5
Hope	8178	21.3
Marquillo	6887	21.2
Marquis x Kota 1656.48 a/	10014	20.3
Marquis	3641	19.4
Reliance	7370	19.0
Reward	8182	13.8
Supreme	8026	13.7
Durum Wheats		
Kubanka-S. Dak. 75-3-15	--	28.0
Kubanka (Hoople strain)	--	27.0
Nodak	6519	26.1
Mindum x Pentad	8882	26.1
Kubanka-75	--	25.6
Monad	3320	25.2
N.D.R. 216	--	24.7
Kubanka Sel. 132	8383	24.3
Akrona	6881	24.0
Kubanka	1440	23.8
Mindum	5296	23.8
Golden Ball	--	23.7
Mindum x Pentad	10006	23.2

a/ Smutty

MONTANA

Montana Agricultural Experiment Station, Bozeman (Austin Goth) (Aug. 31)

The season is easily 10 days earlier this year than is commonly experienced in this area. Practically all harvesting is completed on the Station as well as on farms in the Valley. The winter-wheat varieties from both plots and nurseries are all threshed. Some of the local farmers have been seen seeding wheat the past week.

Some damage has been caused in some of the spring-wheat varieties by hot winds at a critical stage of development in the affected varieties. In the noticeable cases there was premature, unnatural ripening resulting in a good many shriveled grains.

A recent 100-mile trip through the Valley helped to establish a little optimism regarding the feed situation. There is a comfortable surplus of extra good alfalfa hay, pastures look fine, and there are ample stocks of wheat, barley, and oats.

Mr. M. A. McCall was a recent visitor on the experimental plots and at the college.

The following table presents the yields for the winter-wheat varieties in the uniform winter-wheat varietal experiment for this area. The varieties ripened earlier than usual by about a week, thus cutting down the yield of those varieties which are favored when given a longer fruiting period.

Yields of winter-wheat varieties grown in triplicate plots at Bozeman, Mont., 1930-31

Variety	C.I.No.	Average Yield (Bu. per acre)
Nebraska No. 60	6250	53.6
Kanred	5146	52.2
Minturki x Beloglina-Buffum	8033	51.7
Minard x Minhardi	8889	50.7
Minturki	6155	49.3
Minhardi x Minturki	8034	48.7
Minhardi x Minturki	8215	47.3
Kharkof	1442	46.9
Karmont	6700	42.2
Newturk	6935	41.1

WESTERN BASIN AND COAST AREAS (North to West and South)

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (Aug 31)

Harvesting and threshing of the small grains was completed in August. The severe hot spell of July and the lack of precipitation caused abnormally low yields in the irrigated nursery, shrunken kernels, and low test weight per bushel. Dry-farm grain, although generally poor, escaped the damaging effect of the severe heat wave.

The precipitation for August was 0.36 of an inch as compared with 0.74 of an inch for a 10-year average. The total for 1931 since January 1 is 5.74 inches, as compared with 10.98 inches for a 10-year average. The evaporation for July was 6.70 inches and for August 5.16, as compared with 5.49 and 5.44, respectively, for a 10-year average. The maximum temperature for August was 95° recorded on the 12th and 20th. A minimum of 40° F. was recorded on the 27th.

Corn and sorghum have grown rather well in August, but a number of late varieties will probably fail to ripen.

Yields from the uniform winter-wheat nursery and yields from the uniform spring-wheat nursery are given in the following tables.

Yields of winter-wheat varieties grown in triplicated rod rows in the uniform winter-wheat nursery at Logan, Utah, 1931

Variety	C.I.No.	Av. Yield (Bu. per acre)
Fortyfold x Federation	8247	36.1
Oro	8220	35.8
Hybrid 128	4512	35.5
Turkey Wash. No. 326	6175	35.4
Hybrid 128 x Fortyfold	10066	35.3
Fortyfold	4156	34.3
Kanred	5146	34.2
Triplet	5408	33.9
Argentine	10061	33.1
Ridit	6703	33.0
Jenkin	5177	32.8
Albit	8275	32.8
Kharkof	1442	32.7
Sherman	4430	32.5
White Odessa x Federation No. 1003	10065	32.4
Fortyfold Sel. 29	10062	32.1
Fortyfold Sel. 43	10063	32.1
Hussar x Hoenheimer Oreg. No. 3025	10068	28.8
Fortyfold Sel.54	10064	27.3
Hussar x Hoenheimer Oreg. No. 3024	10067	23.9
White Winter	5219	21.3

Yields of spring-wheat varieties grown in triplicate rod-rows in the uniform spring wheat nursery at Logan, Utah, 1931

Variety	C.I.No.	Nur.No.	Av.Yield (Bu. per acre)
Federation x Dicklow Aber.Sel. 28180	----	1168	47.2
White Federation	4981	----	46.8
Hard Federation x Dicklow Aber.Sel.28105	----	1163	46.7
Federation	4734	----	46.0
Bobs x Federation Aber.Sel. 28226	----	1170	45.8
Baart (Check)	1697	----	45.3
Hard Federation x Dicklow Aber.Sel.28138	----	1165	44.9
Federation x Dicklow Aber.Sel. 28155	----	1166	43.9
Hard Federation x Dicklow	10073	574	43.7
Federation x Dicklow Aber.Sel.28176	----	1167	43.2
Bunyip	5125	----	43.6
Bobs x Dicklow Aber.Sel. 28267	----	1173	42.8
Onas	6221	----	42.0
Hard Federation x Dicklow	----	781	41.7
Federation x Dicklow	----	1052	41.3
Red Chaff Sel. 154	10072	----	41.2
Hard Federation x Dicklow Aber.Sel.28120	----	1164	40.2
Hard Federation Sel. 31	8255	----	39.6
Baart x Federation	8254	----	39.4
Bobs x Federation Aber. Sel. 28233	----	1171	38.8
Bobs x Dicklow Sel. 28247	----	1172	38.3
Pacific Bluestem	4067	----	38.0
Federation x Dicklow	10074	561	37.4
Federation x Dicklow Utah 01-24	----	1169	37.3
Baart x Ridit Washington No. 2762	----	1176	37.3
Reliance	7370	----	36.7
Dicklow x Sevier Sel. 14-85	----	1174	34.9
Ceres	6900	----	34.1
Irwin Dicklow	8855	----	33.1
Jenkin	5177	----	32.9
Hard Federation	4733	----	32.7
Utac	10045	----	29.0
Marquis	4158	----	26.5
Marquis x Turkey Wash. No. 2763	----	1175	21.8

ARIZONA

Agricultural Experiment Station, Tucson (Cereal Agronomy, A. T. Bartel) (Sept. 2)

The weather for August has been extremely mild; frequent rains have cooled the atmosphere. According to the University weather bureau, the mean maximum temperature for the month was 94.0; maximum, 102; mean minimum, 70.5, and minimum 66.0°. The total precipitation was 3.96 inches. The three heaviest rains occurred on August 3, 8, and 13, when 0.82, 0.89, and 0.85 inches, respectively, were recorded.

Sorghums are making very rapid growth and many are heading. It is hoped that the cool weather will help the sorghums to fill well.

The percentage of rust on some of the hybrids and varieties grown in the rust nursery at Tucson, 1930-31, are given in the following table:

Percentage of stem rust on some of the wheat hybrids and varieties grown in the rust nursery at Tucson, Ariz., 1930-31.

Variety or Hybrid	C.I.No.	Nur. No.	Rust (P.ct.)	Type of infection
Federation x Dicklow	---	526	75.0	4
Do.	---	538	75.0	4
Do.	---	543	70.0	4
Do.	---	554	80	4
Do.	10074	561	55	4
Do.	---	756	55	4
Do.	---	764	60	4
Do.	---	767	55	4
Do.	---	1051	70	4
Do.	---	1052	80	4
Hard Federation x Dicklow	10073	574	85	4
Do.	---	580	75	4
Do.	---	592	60	4
Do.	---	617	50	4
Do.	---	781	70	4
Do.	---	782	70	4
Do.	---	795	70	4
Do.	---	802	70	4
Do.	---	780	55	4
Dicklow x Federation (Utah 01-24)	---	1169	60	4
Dicklow x Hard Federation (Utah Q80)	---	---	50	4
Do. (Utah Q132)	---	---	40	4
Do. (Utah Q227)	---	---	45	4
Do. (Utah Q231)	---	---	35	4
Do. (Utah Q250)	---	---	20	4
Federation x Sevier (Utah 18a-188)	---	---	30	4
Federation x F22 (Utah 28a-76-192)	---	---	45	4
Dicklow x F22 (Utah 35c-130)	---	---	35	4
G149 x Federation (Utah 29-55-56)	---	---	45	4
Reliance	7370	---	T.	2-3
Hope	8178	---	T.	2-4
Sonora	---	---	60	4
Irwin Dicklow	8855	---	65	4
Arizona No. 39	---	---	10	4
Bunyip	5125	---	30	4
Sevier Sel. 59	---	---	T.	2-3

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OF PLANT INDUSTRY

CEREAL COURIER

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Bureau of Plant Industry, U. S. Department of Agriculture
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Vol. 23 September 20, 1931 No. 22
Personnel (Sept. 11-20) and Field Station (Sept. 1-15) Issue

PERSONNEL ITEMS

Mr. R. W. Leukel spent July 15 and 16 in Luray, Va., and vicinity, investigating a reported outbreak of the wheat-nematode disease. In company with Mr. James Godkin, extension pathologist of Blacksburg, Va., Mr. G. H. Clark, county agent of Page County, and Mr. Morrison of the Page Milling Co., Mr. Leukel visited about 18 farms in the area supposed to be infected. From a trace to one per cent of galls was found in the threshed wheat on about a dozen farms. The disease, according to the farmers, has been present for several years. It undoubtedly has been kept in check by crop rotation and by the thorough cleaning to which the seed wheat is subjected before sowing and which removes most of the galls.

Mr. Leukel found stinking smut in Page County more serious than the wheat-nematode disease. Smut balls were found in nearly all of the wheat examined. Officials of the Page Milling Co. reported that several farmers had brought in wheat which was so smutty that they had been compelled to refuse to buy it. A vigorous seed-treatment campaign is being carried out by Mr. Clark, the county agent.

Mr. F. D. Richey left Washington on September 12 for points in Ohio, Indiana, Illinois, Missouri, Kansas, and Iowa in the interests of cooperative corn experiments. Mr. Richey will be in the field about three weeks.

MANUSCRIPTS AND PUBLICATIONS

Galley proof of article entitled "Inheritance of Resistance to Rust, Puccinia sorghi, in Maize," by E. B. Mains, for publication in the Journal of Agricultural Research, was read on September 3.

The article entitled "Use of Expressed Sap in Physiologic Studies of Corn," by J. D. Sayre and V. H. Morris, appears in Plant Physiology 6(1): 139-148. January, 1931. (Cooperation between the Division of Cereal Crops and Diseases and the Ohio Agricultural Experiment Station.)

The article entitled "Comparison of Methods of Determining Moisture in Corn Tissues," by J. D. Sayre and V. H. Morris, appears in Plant Physiology 6(3): 577-583. July, 1931. (Cooperation between the Division of Cereal Crops and Diseases and the Ohio Agricultural Experiment Station.)

The article entitled "The Effect of Preventing Fruiting and of Reducing the Leaf Area on the Accumulation of Sugars in the Corn Stem," by J. D. Sayre, V. H. Morris, and F. D. Richey, appears in the Journal of the American Society of Agronomy 23(9): 751-753, figs. 1-3. September, 1931. (Cooperation between the Division of Cereal Crops and Diseases and the Ohio Agricultural Experiment Station.)

Farmers' Bulletin 885 revised entitled "Wheat Growing in the Southeastern States," by Clyde E. Leighty, was received from the Government Printing Office on September 4.

UNITED STATES DEPARTMENT OF AGRICULTURE

Director of Personnel and Business Administration

Washington

September 17, 1931.

CHIEFS OF BUREAUS AND OFFICES:

Property Records and Accountability.

The regulations of the Department provide for a system of bureau property records which will show at all times the non-expendable and semi-expendable property of the United States and the officials or employees accountable for the same. Under these regulations bureaus are responsible for the maintenance of an adequate system of property accountability throughout their services. Individual situations which have been developed in certain instances indicate that adequate systems of property accountability have not been in effective operation in every case, in that accountability for Government property has not been duly recorded in every instance, inventories have not been sufficiently frequent and apparently have been certified in a perfunctory manner rather than by actual physical check of the property involved, and so on. It is of importance that every Department officer or employee realize that, until relieved in due form, he is responsible for Government property entrusted to his care. *

(Signed) W. W. Stockberger

Director.

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

Coastal Plain Experiment Station, Tifton (Corn Breeding, H. S. Garrison) [Sept. 15]

Harvesting of experimental corn was completed on September 11. A very good quality but not a large quantity of breeding material was obtained this year. One of the tobacco barns on the Station is being used in which to dry the corn. This particular barn is equipped with oil burners and has been very satisfactory as a corn drier.

Mr. C. H. Kyle left for Baton Rouge, La., on September 9, after having been here during most of the harvesting period.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger)(Sept. 15)

So far September has been dry and hot. Some of the sorghums are drying ripe, though most are ripening normally. Broomcorn is harvested with the exception of the seed heads. Grain sorghums are being harvested as they ripen. Fargo milo and Dwarf hegari are the only varieties of the first date-variety not harvested. Four varieties of the second date-variety are harvested.

Dr. J. H. Martin visited the Station during the first week of September and left on Sunday, the sixth. The writer accompanied Dr. Martin to Stillwater and Lawton, where the sorghum experiments were observed. At Lawton the sorghums appeared better than average because chinch bugs were comparatively few for that region this season. En route to Stillwater, Lawton, and Woodward conditions are droughty, almost equaling those of 1930.

The maximum temperature for the first half of September was 104° on the fifth; the minimum was 59° on the second. The precipitation totaled 0.34 of an inch, recorded in three showers. Rain is needed before wheat is sown.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis) (Sept. 15)

The weather has been very hot for the first 15 days of September. There has been no rain during this period to moisten the dry surface soil. Wheat will be sown as soon as sufficient rain falls or as soon as there is a break in the high temperature.

Although most corn on the Station has produced no ears, the corn varietal test promises fair yields. This corn was planted on May 28, or about 12 days later than the corn on the rotations. With the exception of a few late varieties, it seems certain that the corn in the varietal test will mature.

Proso varieties were harvested last week and early this week. There were no stands on the sowed grain stubble preparation, and the satisfactory stands on the fallow preparation do not promise more than up to 20 bushels an acre.

The grain sorghums in the varietal test in most cases have not headed on the sowed stubble preparation but promise satisfactory yields on the fallow preparation if the varieties are early enough to mature. The Freed sorgo group, the Tribune Kansas selections, kafir selections 6 and 10 made at this Station, Yellow kafir, Early Yellow milo, Early White milo, and some of the Feterita hybrids promise to mature about average yields on fallow.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (Sept. 14)

The past nine days have equaled any hot period experienced this summer. Maximum temperatures have ranged from 95 to 105 degrees, with an average for the nine days, September 5 to 13, inclusive, of 99.7°. Only twice before in the last 25 years has the thermometer registered over 100 degrees in September. The wind is from the north today, and it is much cooler.

There has been no precipitation. The first seeding in the date-of-seeding winter-wheat nursery was made on September 2. This was on fallow and the Columbia drill was put down as far as possible, but only parts of the rows have emerged. The varietal plots will be sown today, but there is no hope of emergence until there is rain.

Corn has naturally ripened very rapidly. Grain sorghums are riper now than they were when harvested last year, which was about the first of October.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden) (Sept. 8)

Another heat wave is being experienced. This is the fourth consecutive day with temperatures above 100 degrees. There appears to be no relief in sight. The wind has subsided today but is still from the south, and there is not a cloud in the sky. The leaves are being scorched on all the trees and shrubbery on the Station with the exception of the Chinese elms. The Northwest poplars in the shelter belt nearly all died during the summer from the effects of drought and heat. The ash and box elder still show signs of life but have made very little growth during the past three years.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (Sept. 16)

The weather for the first half of September has been unusually warm. Temperatures above 90° were recorded on three different days. Temperatures of 100° or above were recorded twice. Labor Day, when a maximum temperature of 104° was recorded, was the hottest September day in the history of the Station. Incidentally a Missouri Slope tennis tournament was under way at Mandan on that day.

Threshing, with the exception of some plant selections, has been completed for some time. Yields for varieties in plots have been computed and are as follows:

Average yield of spring-wheat varieties grown in triplicate 50th-acre plots at Mandan, N. Dak., 1931.

Variety	C. I. No.	Yield (Bu. per acre)
Reliance Sel. No. 22	8384	21.0
Marquis x Kota 1656.85	8385	19.6
Marquis x Kota 1656.48	10014	18.2
Reliance	7370	17.5
Kota x Marquis 1656.48	8004	17.2
Ceres	6900	17.1
H-44	8177	15.4
Marquis	3641	14.4
Hope	8178	14.0
Double Cross Minn. 2303	10003	13.7
Supreme	8026	11.4
Marquillo	6887	11.1
Reward	8182	10.7
Double Cross Minn.2305	10005	10.5
Mondak	7287	14.7
Kubanka Sel. No. 132	8383	13.3
Monad	3320	11.7
Nodak	6519	10.8
Kubanka	1440	9.2
Mindum	5296	7.0

Average yield of oat varieties grown in triplicate[a] 50th-acre plots at Mandan, N.Dak., 1931.

Variety	C. I. No.	Yield (Bu. per acre)
Green Russian Selection	2344	33.3
Anthony	2143	32.5
Swedish Select	134	32.1
Rainbow	2345	31.7
Markton	2053	31.7
Green Russian Selection	2343	30.9
Victory	560	29.7
Golden Rain	493	29.3
Edkin	2330	27.4
Sixty-Day	165	25.4
Gopher	2027	24.6
Iogold	2329	23.9

[a] Yield figures are from the average of two series. The third series was practically destroyed by early frost and wind.

Average yield of barley varieties grown in triplicate 50th-acre plots at Mandan, N. Dak., 1931.

Variety	C. I. No.	Yield (Bu. per acre)
Glabron	4577	13.9
Hannchen	531	13.9
Trebi	936	13.5
New Composite Cross	5461	13.3[a]
Horn	926	13.2
Odessa	182	12.8
Featherston	1120	12.1
Alpha	959	10.3
Vaughn	1367	6.1[b]

[a] Average of two plots. [b] Very thin stand.

On September 15, 204 rod rows of winter wheat were sown on a piece of land which had been plowed the previous day. The soil was very dry, too dry to germinate the seed. Fortunately, a rain of 0.41 of an inch fell during the night and probably will be sufficient to start growth.

Rainfall in the first half of September totaled 0.44 of an inch.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (Sept. 17)

Dry weather has continued almost without interruption since about August 10. Almost the only rain during that time was 0.22 of an inch on September 15. The temperature has been near the freezing point several nights but no frost has occurred yet. The minimum temperature was 34° on September 12. The maximum temperature this month was 98° on September 6.

The sowing of winter wheat in the nursery and of winter wheat and rye in duplicated plots is completed. A good rain is needed to insure germination.

The corn varieties have been harvested and good yields are evident. The ears crossed and selfed in the corn nursery have been harvested and hung up to dry.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (Sept. 15)

The first frost of the season, 32°, was recorded this morning, September 15. This makes 100 days since the last frost in the spring, or 15 days over the average frost-free period of 85 days. South winds at the opportune moment warded off frost two or three times earlier in the month when freezing temperatures were recorded in other parts of the State. The maximum temperature for the month to date was 96° on the 8th. Almost no precipitation has been recorded so far this month.

Except for some inheritance material, the nursery threshing has been completed for the season. Threshing of heads for inheritance material is now in progress. Bunt spores and balls have been scattered for the overwintering of bunt experiments.

The uniform winter-hardiness nursery emerged eight days after sowing with fair stands. Grasshoppers have caused slight damage to growth but have been less active for the past few days.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) [Sept. 17]

The weather for the past two weeks has been very favorable for harvesting and threshing of the later crops.

The winter-wheat nurseries and varietal plots were sown during the week of September 7. At the time of sowing, soil moisture in fallow land was hardly sufficient for the best germination. A shower of 0.30 of an inch on the 10th improved conditions to some extent. The flax varieties and safflower were threshed this week, which completes the harvest for the season.

The temperatures were as follows: Maximum, 92° on the 6th; minimum, 36° on the 14th, and mean 60°. The precipitation totaled 0.35 of an inch.

WESTERN BASIN AND COAST AREAS (North to West and South)

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin) (Sept. 19)

The long summer drought was broken on September 18, when 0.30 of an inch of rain fell in the 24-hour period ending at 5:00 P. M. There were a few light showers on previous days this month but none of any consequence.

Table 1 shows yields of 16 winter-wheat varieties grown in plots at the Pendleton Field Station in 1931. Table 2 shows yields of 11 spring-wheat varieties grown in 1931.

Table 1.-Average acre yields of winter-wheat varieties grown in duplicate 20th-acre plots at the Pendleton Field Station, 1931

Variety	C.I.No.	Yield (Bu. per acre)
Federation	4734	39.3
Fortyfold x Federation	8247	43.5
White Odessa x Hard Federation No. 1003	10065	41.2
Fortyfold	4156	30.9
Mosida	6688	39.5
Ridit	6703	36.8
Triplet	5408	39.0
Sherman	4430	36.4
Oro	8220	38.5
Kharkof	8249	35.5
Fortyfold Sel. 29	10062	43.2
Fortyfold Sel. 43	10063	37.0
Fortyfold Sel. 54	10064	39.2
Albit	8275	33.9
Hybrid 128	4512	37.3
Jenkin	5177	42.0

Table 2.-Average acre yields of spring-wheat varieties grown in duplicate 20th-acre plots at the Pendleton Field Station, 1931

Variety	C.I.No.	Yield (Bu. per acre)
White Federation	4981	42.8
Hard Federation Sel. 82	--	37.4
Hard Federation Sel. 31	8255	35.4
Baart	1697	34.1
Federation	4734	40.9
Onas	6221	43.5
Baart x Federation	8254	39.8
Marquis	4158	29.8
Reliance	7370	31.7
Dicklow	3663	34.2
Jenkin	5177	35.1

Sherman County Branch Station, Moro (Cereal Breeding, R. B. Webb) [Sept. 12]

The extremely dry conditions in the Columbia Basin caused considerable reduction in the 1931 yield of wheat as compared with an average over several years. Land which is fairly uniform under ordinary conditions produced a spotted stand and ununiform yield on account of the unusually dry conditions.

At present the surface of the summer fallow is dry to a depth of 4 to 6 inches and little seeding will take place in this section of the Columbia Basin until at least an inch of rain has fallen. If the rainfall is light in the next two months, a good deal of the land will be seeded to spring grains.

The following table presents the yield and rank of the 12 winter wheats that averaged highest in yield at five localities in eastern Oregon. Forty-two varieties were grown in each of the outlying nurseries. The same varieties also were grown in four other nurseries in Morrow and Umatilla counties. The nurseries in these counties were taken care of by the Pendleton Field Station.

No Turkey wheats appear in this list of the 12 highest-yielding varieties, although Turkey type wheats are the leading varieties grown by farmers in this section. Federation was the only commercially grown wheat that averaged high enough to be included.

Average acre yield and rank of the highest-yielding winter-wheat varieties grown at five nurseries in eastern Oregon, 1931

Variety	C.I. No.	Nursery No.	Maupin		Culver		Kent		Condon		Moro		Average	
			Yield	Rank	Yield	Rank	Yield	Rank	Yield	Rank	Yield	Rank	Yield	Rank
Arcadian x Hard Federation	-----	977	19.1	2	13.6	3	20.5	2	22.2	4	18.1	2	18.7	1
Fortyfold x Hard Federation	8243	---	17.8	3	12.9	6	24.3	1	23.4	2	9.1	33	17.5	2
Arcadian x Hard Federation	----	977	16.5	5	13.5	4	19.6	5	23.4	2	14.0	7	17.4	3
Fortyfold x Hard Federation	----	965	16.1	7	13.4	5	18.9	8	21.0	7	16.3	3	17.1	4
Federation	4734	---	16.1	7	12.9	6	16.0	29	23.7	1	14.1	6	16.6	5
Fortyfold x Hard Federation	----	964	17.8	3	12.5	11	18.2	10	20.5	10	12.0	15	16.2	6
Fortyfold x Federation	8247	---	15.3	13	12.3	12	18.1	13	20.5	10	12.5	11	15.7	7
Fortyfold x Federation	----	980	15.7	11	12.6	10	17.0	16	17.7	21	14.9	5	15.6	8
Jenkin Sel. 160	----	---	14.7	16	12.9	6	16.1	25	20.7	9	13.0	9	15.5	9
Arco	8246	---	11.6	29	10.4	15	18.2	10	17.4	24	19.0	1	15.3	10
Fortyfold Sel. 29	10062	---	16.0	10	10.4	14	17.2	15	22.0	5	10.7	21	15.3	10
Fortyfold Sel. 43	10063	---	19.3	1	7.9	23	19.2	7	17.1	25	10.6	22	14.8	12

OCT
PLANT INDUST

CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 October 10, 1931 No. 24

Personnel (Oct. 1-10) and Field Station (Sept. 15-30) Issue

The issue of the Cereal Courier of September 30 (Vol. 23, No. 23) was omitted.

PERSONNEL ITEMS

Mr. C. E. Chambliss left Washington on September 23 for points in Illinois, Texas, Louisiana, Alabama, Georgia, Florida, and South Carolina to confer with rice millers, manufacturers of food products, and experiment station workers. He also will inspect and study cooperative rice experiments. Mr. Chambliss will be in the field about five weeks.

Dr. Charlotte Elliott left Washington on September 28 for Garden City, Kans., and Dalhart, Tex., where she spent one week inspecting cooperative sorghum experimental plots.

Mr. O. S. Fisher returned to Washington on September 26 from a three-week trip to Chicago, Ill., Minneapolis, Minn., and points in Montana. Mr. Fisher and Mr. H. R. Sumner, of the Northwest Crop Improvement Association, developed plans for checking the seed supplies of wheat and other crops to be furnished to farmers in drought areas of North and South Dakota and Montana the coming season. It is estimated that it will be necessary to ship in a total of approximately 2,500,000 bushels of wheat for seeding in these States, in addition to the seed needed for feed crops, such as oats and barley.

Mr. J. M. Hammerly, senior scientific aid in corn investigations since 1907, retired from the service on September 30 at the age of 74. After reaching the retirement age, Mr. Hammerly was granted two extensions of two years each.

As an evidence of the high esteem in which Mr. Hammerly is held by his fellow workers in the Division of Cereal Crops and Diseases he was presented with a watch chain and knife by the Washington office and with a suit case by his colleagues in the corn investigations project both in Washington and the field. Some days before his retirement Mr. Hammerly was tendered a luncheon at an up-town tea room by the women of the Division.

Mr. Hammerly's friendly helpfulness will be missed sincerely by all members of the Division, and for the corn project the termination of his efficient service means a real loss.

Mr. C. H. Kyle returned to Washington on September 24 from a four-week trip to points in Georgia, Louisiana, Tennessee, and South Carolina in the interests of cooperative corn investigations. On the whole, the corn experiments were better than average. Very good seed was obtained at all stations visited and some of the yield tests were very satisfactory. Some insect damage was observed at the extreme southern points, and more or less injury from drought was present in the four States.

Mr. M. A. McCall returned to Washington on September 21 after spending two weeks in Missouri, Kansas, and Nebraska in the interests of cooperative cereal experiments.

Mr. F. D. Richey returned to Washington on October 3 from a trip to some of the agricultural experiment stations in the Corn Belt in the interests of cooperative corn investigations.

VISITORS

Dr. H. D. Barker, botanist and plant pathologist, Agricultural Experiment Station, Port-au-Prince, Haiti, was a Division visitor on October 3. Dr. Barker was formerly connected with the Division of Cereal Crops and Diseases.

Mr. C. P. Ladas of the Office of Dry-Land Agriculture at Grevena (Macedonia) Greece, was a Division visitor on September 30. Mr. Ladas, who has been a student of agriculture in the United States, is returning to his native country.

Dr. W. H. Tisdale of the E. I. du Pont de Nemours & Company, Inc., Wilmington, Del., was a Division visitor on October 5 and 6.

Dr. Collins Veatch, agronomist with the Cory Products Refining Company, New York City, located at San Francisco de Macoris, Santo Domingo, visited the Division on October 9.

MANUSCRIPTS AND PUBLICATIONS

44 A manuscript entitled "Chemical Composition of Rice and its Relation to Soil Fertility in China and Japan," by Jehiel Davidson and Charles E. Chambliss, was approved on September 25 for submittal to Science.

45 A manuscript entitled "A Cytological Study of Heterothallism in Puccinia coronata," by Ruth F. Allen, was submitted on September 26 for publication in the Journal of Agricultural Research.

46 A manuscript entitled "Seed Selection for Sunrise Kafir," by John B. Sieglinger, was approved on September 28 for submittal to the Journal of the American Society of Agronomy.

Six articles for the Yearbook of Agriculture, 1932, written by members of the staff of the Division of Cereal Crops and Diseases, have been approved by the Chief of the Bureau and submitted for publication. The titles are as follows:

47 Wheat Losses from Smuts, by J. A. Faris.

48 The Origin and Importance of Strains of Wheat Bunt, by H. H. Flor.

49 The Relation of Climate to Infection and Loss from Loose Smut of Wheats, by V. F. Tapke.

50 The Control of Bunt by Seed Treatment, by R. W. Leukel.

51 Wheat Flag Smut Control, by V. F. Tapke.

52 Controlling Smut by Breeding **Resistant** Varieties, by J. A. Clark.

Galley proof of Technical Bulletin No. 267 entitled "Experiments on Hybrid Vigor and Convergent Improvement in Corn," by F. D. Richey, and G. F. Sprague, was read on September 24. Page proof was read on October 6.

Galley proof of article entitled "Inheritance in a 'Constant' Hybrid between Aegilops ovata and Triticum dicoccum," by J. W. Taylor and C. E. Leighty, for publication in the Journal of Agricultural Research, was read on October 10.

Page proof of Farmers' Bulletin No. 1679 entitled "Pop Corn," by Arthur M. Brunson, and Carl W. Bower, was read on September 22.

The article entitled "Inheritance of Type of Floret Separation and Other Characters in Interspecific Crosses in Oats," by Victor H. Florell, appears in the Journal of Agricultural Research 43(4): 365-386, pls. 1-6, figs. 1-2. August 15, 1931. (Cooperation between the Division of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

CORRECTION

Mr. Leukel's trip to Virginia to investigate a reported outbreak of wheat-nematode disease was made on September 15 and 16 instead of July 15 and 16, as reported in the Cereal Courier of September 20.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

GREAT PLAINS AREA (South to North)

TEXAS

United States San Antonio Field Station, San Antonio, (G. T. Ratliffe) [Sept. 30]

Average acre yield of six varieties of flax grown in triplicated plots at San Antonio, Tex., 1931.

Variety	C.I.No.	Height (Inches)	Yield (Bu.per acre)
Rio (Long 79)	280	27	22.3
Morteros (Argentina)	107	26	20.7
Rosquin (Argentina)	109	27	20.2
N. D. R. 114	13	27	19.3
Linota	244	28	17.9
Bison	389	27	17.1

These six varieties were sown on Dec. 15, 1930, and harvested May 25, 1931. It is interesting that the varieties from Argentina were as tall as the common varieties when both were grown as fall-sown crops.

For comparison of yields of flax grown as a fall-sown crop at two other locations in the Southwest, see reports from El Centro, Calif., and Mesa, Ariz.

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins (Sept. 15)

While the weather in August was unusually cool, that of the first part of September was hot and there were strong drying winds during most of the period. The ground is too dry for the germination of small grains, and only a few farmers have started seeding.

In spite of the dry weather cotton has produced one of the biggest crops on record in Denton County.

Ground has been prepared for the fall nursery at the Station, but it is very dry and needs rain to put it in condition for seeding. All seed for the nursery and the varietal plots was treated at a local creamery for loose smut. A number of the varieties were injured by the hot water and it was necessary to secure new seed.

Dr. P. C. Mangelsdorf, of the Texas Agricultural Experiment Station, was a recent visitor. He reviewed the season's work and helped to outline plans for future work at Denton and for the cooperative work in the Panhandle of Texas. A varietal experiment with wheat in field plots and a wheat nursery occupying an acre of land will be conducted at the Price Memorial College at Amarillo. In addition, there will be 10 cooperative wheat varietal tests with farmers in nine counties in the Texas Panhandle.

[October 1]

After one of the coolest summers on record in north Texas, the month of September has not only been the hottest month of the year but the second hottest September on record. The mean temperature was 82.2°F., which is 5.1° above normal. As the temperature for the other months of the summer was subnormal, the accumulated departure from normal is still 2.2° below normal. The mean maximum temperature for the month was 95.7°, the highest on record at the Station.

The rainfall for September was only 0.33 of an inch. The normal is 2.16 inches. This brings the accumulated departure from normal since January 1 to -5.2 inches.

The humidity for September also averaged the lowest on record, namely, 59.1 per cent. The normal for September is 68 per cent. The evaporation was 7.764 inches, the highest on record.

The dry weather of September caused feed crops to suffer from drought, and in many cases sorghums failed to head. Summer legumes, such as peas, made very little growth. Sweet clover has been able to hold its own but has made no growth. Cotton has produced a heavy crop in spite of the drought and although some bolls were opened prematurely, the larger part of the cotton is of fine quality and staple length.

Ground for fall seeding is still very dry and in many instances it will be necessary to wait for rain before the ground can be prepared. Some grain is being sown in the dry soil with the hope that rain may come soon.

On September 18 a trip was made to the Texas Panhandle to distribute seed wheat to the farmers who are cooperating in conducting varietal tests. Only a small acreage has been sown, as in general the Panhandle is also very dry. The wheat acreage apparently will not be reduced materially in that section, but wheat ground will be poorly prepared in most cases. The farmers feel that they can not put much of an investment into the crop and are either letting the volunteer wheat stand or preparing the seed bed with as little expense as possible.

Mr. P. B. Dunkle, superintendent of the Station, has enrolled for graduate work at the Texas A. and M. College and will be away until February 1.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger) (Oct. 3)

The summer's drought was finally broken by a rain of 2.35 inches on September 20. Considerable wheat has been sown since the rain.

Sorghums have ripened rapidly and the two earlier dates of the varietal experiment are harvested. Seed heads are being harvested from the sorghum nurseries.

The maximum temperature for the last half of September was 100° on the 16th, the minimum was 48° on the 26th. The precipitation for the same period was 2.52 inches, the total for September was 2.86 inches.

KANSAS

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (Sept. 26)

The summer season at Manhattan was marked by severe drought in July and heavy rains in August. About 15 inches of rain fell in three heavy rains in August, the last of which, accompanied by hail, fell on the 31st. Considerable hail damage occurred in corn and sorghum growing in certain experimental plots. High temperatures prevailed during the first three weeks of September, but recent rains have been followed by normal fall temperatures.

Land prepared for rust and bunt nurseries was so severely washed by August rains that it had to be abandoned and new land prepared. The recent rains have brought this land into fair seed-bed conditions and sowing will begin next week. The rust nursery will consist of about 800 eight-foot rows and 1,651 head rows. The latter consist of selections from promising rows of about 30 crosses in F_4 to F_8 generations.

A cereal-disease garden containing 50 winter wheats will be sown this fall. This nursery contains standard varieties and promising selections developed at the various State experiment stations in the Southern Great Plains area. Records will be taken on the relative susceptibility of these wheats to the rusts, smuts, and other diseases occurring in the area.

The department of botany and plant pathology is planning to sow a large bunt nursery. Fifty-one collections of bunt made at various points in the State will be tested for physiologic forms, using 14 differential varieties. Many varieties and selections of winter wheat also will be tested with a composite of all these bunt collections.

Dr. J. H. Parker left September 24 for Ithaca, N. Y., where he will spend the college year in teaching. Dr. Parker expects to return early in June, 1932.

Mr. M. A. McCall was a visitor on September 14.

Fort Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson) (Oct. 3)

September was a month of much wind and high temperatures and limited rainfall. The sorghum crop was sufficiently far enough along to escape serious injury. The conditions are not favorable for the seeding of wheat, as in this area most of the surface soil is very dry. The subsoil moisture is not so great at this time as it was last year. This applies to the western half of Kansas.

Seeding of winter wheat in experimental plots and nursery has been completed at this Station. Most of the sorghums have been harvested and threshing will start next week.

The many friends of Mr. A. L. Hallsted will regret to learn that Mrs. Hallsted passed away on October 3. Mr. and Mrs. Hallsted have been associated with this Station for many years.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (Oct. 2)

Although the winter-wheat varieties were sown on October 15, there has been no emergence because of continued dry conditions. Precipitation at any one time has not been sufficient to moisten the dust to a greater depth than half an inch. Nursery seeding was completed on the 16th. Only a few spears are showing. A good rain within a week might still make a stand possible, but the probability is that all the winter wheat this season will be in the irrigated smut nursery.

The dry-land corn varietal and hybrid yield tests have been harvested. The hot, dry weather ripened them much earlier than usual. Yields will be better than would be expected. One or two hybrids were estimated to have yielded over 35 bushels. There will be a number of yields of 25 to 30 bushels.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (Oct. 1)

Winter wheat sown on September 15 in very dry, powdery soil emerged on September 20. It is now about four inches tall.

Rains in September have been far above normal. The total precipitation was 3.11 inches, 1.77 inches above normal. This was the highest September precipitation in the history of the Station. A rainfall of 2.67 inches was recorded in the last half of the month.

Temperatures for the last half of September have been about normal; the maximum was 88°, and the minimum was 36°. No killing frosts have been recorded.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (Oct. 2)

The hot, dry weather of the first half of September was followed by a cool, cloudy, rainy period. The total precipitation recorded for September 1 to 14, inclusive, was only 0.03 of an inch. Beginning with September 15 the weather was generally cloudy with some rainfall recorded on nine of the 16 days, September 15 to 30, inclusive, amounting to 3.08 inches.

The wet weather delayed threshing of flax from plots and probably caused some damage to flax in the shock. Flax from varietal and date-of-seeding plots was threshed September 29 and 30.

Completion of the final rust and wilt notes and harvesting of flax in nursery rows also was delayed by the wet weather. Further development of rust on flax was checked by the hot, dry weather early in September. Rust notes in the nursery in field Q are fairly indicative of the relative rust resistance and susceptibility of varieties. Resistant varieties such as Bison and Buda on Field Q were lightly but uniformly infected with rust. Argentine varieties and progenies from rust-free plants selected in 1930 remain rust free. In Field H on late-sown flax rust infection is generally light. Rust is conspicuous on the most susceptible varieties but difficult to find on resistant varieties such as Bison and Buda which were uniformly infected in the nursery on Field Q.

Most of the flax in nursery rows is harvested. F_2 and F_3 hybrids, spacing and natural crossing experiments, and most of the after-ripening-loss experiment still remain to be harvested.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (Oct. 3)

The drought was broken by several good rains in the last 10 days of September. The precipitation for the latter half of the month was 2.78 inches and the total for the month, 3.02 inches. The rain has caused uniform germination of all fall-sown crops at the Substation and has revived pastures and late garden vegetables.

Light frosts have occurred on three mornings, the minimum temperature being 32° on the 23rd, 24th, and 26th. The maximum temperature for September was 98° on the 6th.

Grain samples are being prepared for sending out for various purposes and the remainder is being stored for the winter.

Wheat in the State and especially in this section is unusually high in protein although low in test weight per bushel. One sample of Marquis from a continuous wheat rotation at the Substation tested 21.2 per cent protein, as shown by the report from the milling laboratory at the Agricultural College at Fargo. This seems to be the highest record for protein at this Substation.

Grasshoppers are still active during the present warm weather and poison bran has been spread over the fall-sown grain to reduce their numbers.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (Sept. 30)

Station work has been completed for the year and data for the season are being tabulated. From the standpoint of the experiments conducted at this Substation, the season may be considered a very favorable one. Although lack of moisture cut yields below the average, the drought was not serious enough to obscure significant differences in yield, test weight, rust resistance, and agronomic characters. Furthermore, since the cereal project is given more favorable conditions for growth than exist on the average farm, it may be that the results and varietal differences are more nearly comparable to those which would occur on the farm in the average good year.

A goodlyamount of precipitation has fallen the latter half of September, the total amount recorded for the month being 2.68 inches. Freezing temperatures have held off unusually well, only two frosts having occurred this fall, with a minimum of 32 degrees.

Uniform stands were secured in the winter-hardiness nursery. Because of cool weather, growth has been slow but should be heavy enough to go into the winter well, provided cold weather does not come too suddenly.

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) [Sept. 26]

Growth conditions for winter wheat have been materially improved by rains totaling 1.53 inches and favorable temperatures between showers. Stands in all winter wheat seedings are very good.

The average yield and percentage of winter survival of 25 winter-wheat varieties grown in four 50th-acre plots are given in the following table. Comparisons between the winter survivals of the new winter-hardy hybrids and those of the Kharkof and Turkey wheats are especially interesting.

The average yield of 10 oat varieties grown in four 50th-acre plots are also given in a table.

The precipitation for September totaled 1.88 inches, a quarter of an inch above average. The temperatures were: Maximum, 92° on the 4th, minimum, 28° on the 22nd, and mean 55°. The first killing frost occurred on September 22.

Average yield and percentage of winter survival of 25 winter-wheat varieties grown in four 50th-acre plots at the Judith Basin Branch Station, Moccasin, Mont., 1931

Variety	C.I. No.	Winter Survival (Per cent)	Yield (Bu. per acre)
Minhardi x Minturki	8215	34.0	7.9
Turkey C.I. 6152 x Minessa	8887	29.0	7.4
Kharkof	6938	28.0	4.5
Eureka x Minhardi	8036	24.0	8.3
Kanred x Minhardi	8042	24.0	5.4
Kanred x Minessa	8045	24.0	5.3
Kanred x Minhardi	8040	20.0	3.7
Kanred x Minhardi	10000	20.0	3.5
Minturki x (Bel.-Buf.C.I.5546)	8033	16.0	2.9
Turkey	6152	14.0	2.0
Minard x Minhardi	8889	13.0	1.2
Minard	6690	11.0	0.7
Minhardi x Minturki	8034	10.0	1.1
Turkey (Nebraska No. 60)	6250	10.0	0.6
Minturki	6155	3.0	0
Beloglina	1543	2.0	0
Newturk	6935	0.3	0
Oro	8220	0.3	0
Kharkof (Hays No. 2)	6686	0	0
Kharkof	1442	0	0
Karmont	6700	0	0
Montana No. 36	5549	0	0
Kanred	5146	0	0
Turkey	1558	0	0
Smithsonian [a/]	10022	0	0

[a/] single plot.

Average yield of 10 oat varieties grown in four 50th-acre plots at the Judith Basin Branch Station, Moccasin, Mont., 1931

Variety	C.I.No.	Yield (Bu. per acre)	Test weight (Lbs.)
Selection (357-185)	----	20.1	36.0
Iogold	2329	17.4	32.0
Markton	2053	17.4	33.0
Selection (357-112)	----	16.8	33.0
Selection (357-168)	----	15.3	34.0
Sixty-Day	165	14.9	29.0
Idamine	1834	12.1	35.0
Swedish Select	134	9.6	34.0
Alexander	1592	9.6	35.5
Victory	742	6.1	36.0

WESTERN BASIN AND COAST AREAS (North to West and South)

OREGON

Sherman County Branch Station, Moro (Cereal Breeding, R. B. Webb)[Sept. 29]

Unusually dry weather prevailed in eastern Oregon for the past month. Fallowed ground is much too dry for wheat to germinate. Farmers are anxiously waiting for rain so they can begin seeding operations.

The total precipitation for September was 0.47 of an inch, recorded on four dates. The maximum temperature was 91° on September 2, the minimum 38° on the 7th and 22nd.

The following tables present the yields obtained this year from winter- and spring-wheat varieties in the uniform nursery.

Average yield of winter-wheat varieties grown in the uniform nursery at the Sherman County Branch Station, Moro, Oreg., 1931

Variety	C.I.No.	Yield (Bu. per acre)
Hybrid 128 x Fortyfold	10066	14.7
Triplet	5408	13.3
Fortyfold Sel. 29	10062	13.0
Hybrid 128	4512	12.8 a/
White Odessa x Hard Federation	10065	12.8
Albit	8275	11.4
Fortyfold x Federation	8247	11.1
Fortyfold Sel. 54	10064	10.7
Ridit	6703	10.7
Oro	8220	10.7
Sherman	4430	10.4
Fortyfold Sel. 43	10063	10.1
Jenkin	5177	10.1
Argentine	10061	10.0
Fortyfold	4156	9.4
Hussar x Hoenheimer	10068	8.7
Turkey	6175	7.9
Kharkof	1442	7.8 a/
Kharkof	8249	7.5 a/
Hussar x Hoenheimer	10067	6.5
White Winter	5210	2.5
Average		10.1

a/ Average of checks.

Average yield of spring-wheat varieties grown in the uniform nursery at the Sherman County Branch Station, Moro, Oreg., 1931

Variety	C.I.No.	Yield (Bu. per acre)
Federation	4734	22.7
Jenkin	5177	21.8
Baart x Ridit Wash. 2762	11386	20.9
Turkey x Marquis Wash. 2763	11385	20.3
Federation x Dicklow	10074	20.1
Hard Federation x Dicklow	10073	19.9
Onas	6221	18.2
Baart x Federation	8254	17.9
White Federation	4981	17.2
Baart	1697	16.6 a/
Red Chaff	10072	16.4
Hard Federation Sel. 31	8255	15.8
Bunyip	5125	14.2
Marquis	4158	13.6
Pacific Bluestem	4067	13.6
Hard Federation	4733	13.0
Ceres	6900	7.9
Average		17.0

a/ Average of checks.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (Oct. 1)

Growing conditions in September have been favorable except for the low precipitation which has only been 50 per cent normal since January 1. All harvesting of the small grains was completed in August. Practically all the winter-wheat nursery has been sown but will be retarded somewhat by the low moisture content of the soil.

Sorghums as well as corn are now ready to be harvested. Grohoma, Western Blackhull and Dawn kafir will not mature at Logan this year. Dwarf hegari and Dwarf Yellow milo have matured about 70 to 80 per cent. Sooner milo, Freed, Dwarf Freed, Dwarf White durra, Red Amber, Black Amber, Dakota Amber, and feterita have matured very well this season.

Of 11 strains of corn all except Reid Yellow dent obtained from Moab, Utah, have matured seed. Yellow dent, white dent, and Gehu flint constitute the varieties included in the corn nursery.

The precipitation for September was 0.53 of an inch and the evaporation 4.33 inches.

The maximum temperature for September was 93° on September 4, the minimum 30° on September 30. There were 139 frost free days from May 8 to September 24.

Dr. J. H. Martin was a Station visitor on September 30.

CALIFORNIA

Imperial Valley Experiment Station, El Centro (Waldo W. Weeth) [Sept. 30]

Average acre yield of five varieties of flax sown on irrigated land at El Centro, Calif., 1931

Variety	C. I. No.	Yield (Bu. per acre)
Linota	244	22.6
Redwing	320	20.6
Bison	389	18.5
Rio (Long 79)	280	18.2

The yields on irrigated land are not strictly comparable, because Linota and Redwing were sown Nov. 15, 1930, while Bison and Rio were sown a month later. All varieties were harvested May 6, 1931.

For comparison of yields of flax grown as a fall-sown crop at two other locations in the Southwest, see reports from Mesa, Ariz., and San Antonio, Tex.

ARIZONA

Salt River Valley Experiment Farm, Mesa (A. T. Bartel) [Sept. 30]

Average acre yield of five varieties of flax grown at Mesa, Ariz., 1931

Variety	C.I.No.	Yield (Bu. per acre)
Linota	244	16.9
Redwing	320	16.2
Bison	389	15.6
Rio (Long 79)	280	13.4

These five varieties were sown Dec. 4, 1930, and harvested May 20, 1931. They were grown under irrigation.

For comparison of yields of flax grown as a fall-sown crop at two other locations in the Southwest, see reports from El Centro, Calif., and San Antonio, Tex.

1931

CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 October 20, 1931 No. 25
Personnel (Oct. 11-20) and Field Station (Oct. 1-15) Issue

PERSONNEL ITEMS

Dr. A. G. Johnson left Washington on October 12 for points in Arkansas, Illinois, Indiana, and Wisconsin in the interests of cooperative cereal-disease experiments. Dr. Johnson will be in the field about two weeks.

Dr. M. N. Levine, University Farm, St. Paul, Minn., arrived in Washington on October 12 for conferences with Department officials regarding cereal-rust research and to prepare cooperative manuscripts.

Dr. J. H. Martin returned to Washington on October 12 from an extensive western trip in the interests of cooperative grain sorghum and broomcorn investigations.

Dr. J. H. Parker, agronomist, has been granted leave of absence from his duties at the Kansas State Agricultural College for the period from October 16, 1931, to June 10, 1932. Dr. Parker is serving as visiting professor of plant breeding at Cornell University during a part of the period in which Dr. H. H. Love is absent in China. In Dr. Parker's absence from Manhattan, the Kansas Agricultural Experiment Station will take care of the cooperative cereal breeding work, Mr. W. H. von Trebra having immediate supervision of the work.

Mr. S. C. Salmon left Washington on October 19 for points in Pennsylvania, New Jersey, Delaware, and New York in the interests of cooperative wheat research.

MANUSCRIPTS AND PUBLICATIONS

53 A manuscript entitled "Bacterial Wilt of Corn," by Frederick V. Rand and Lillian C. Cash, was submitted on October 12 for publication in the Technical Bulletin series. (The authors were at one time in the former Pathological Laboratory, where bacterial diseases including those of cereals were investigated.)

54 A manuscript entitled "Differential Resistance of Inbred and Crossbred Strains of Corn to Drought and Heat Injury," by M. T. Jenkins, was approved on October 15 for submittal to the Journal of the American Society of Agronomy.

55 A manuscript entitled "The Use of the Greenhouse in Sorghum Breeding," by John H. Martin, was approved October 19 for submittal to the Journal of Heredity.

A brief article entitled "The Wheat Smut Problem in the Intermountain and Pacific States," by J. A. Faris, has been approved by the Chief of the Bureau for broadcasting in the Western Farm and Home Hour radio program.

The article entitled "Inheritance of Resistance to Rust, Puccinia sorghi, in Maize," by E. B. Mains, appears in the Journal of Agricultural Research 43(5): 419-430, figs. 1-4. September 1, 1931. (Cooperative investigations between the Purdue University Agricultural Experiment Station and the Division of Cereal Crops and Diseases.)

The article entitled "A Study of Certain Characters in Wheat Back Crosses," by Victor H. Florell, appears in the Journal of Agricultural Research 43(6): 475-498, figs. 1-8. September 15, 1931. (Cooperative investigations between the Division of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

The article entitled "Influence of Humidity on Floral Infection of Wheat and Barley by Loose Smut," by V. F. Tapke, appears in the Journal of Agricultural Research 43(6):503-516, figs. 1-7. September 15, 1931.

An article entitled "Stinking Smut Causes Heavy Losses to Wheat Growers," by D. E. Stephens, appears as Circular of Information No. 61 of the Oregon Agricultural Experiment Station. 6 pp. September, 1931 [Mimeographed.] (Cooperation between the Division of Cereal Crops and Diseases and the Oregon Agricultural Experiment Station.)

ADMINISTRATIVE NOTES

IMPORTANT

Pay Rolls

The decision of the Comptroller General quoted hereafter is very specific in requiring definite information as to service before the certification of pay rolls and prohibiting certification in advance of the last day of the pay period covered by the pay roll in question.

Hereafter it will be necessary before certifying pay rolls to the accounting office for the preparation of checks, that specific information as to service must be supplied by heads of field stations or other officers having supervision of employees to the head of the Division. Pay rolls cannot be certified until the end of the pay period covered. This means that each permanent field employee must send to this Division on the last day of each month, a telegraphic report of his own time and that of individuals on appointment for whom he is responsible. Where several employees are located at a station, working either on one project or more, a single individual will be designated to make the report in order to reduce telegraphic expense.

Telegrams should be limited to the minimum number of words required. The two words "Payroll approved," are suggested with any exceptions added when necessary.

One pay roll is prepared for all the field force. Employees responsible for sending pay roll reports should bear in mind that delay or oversight on their part will hold up payment not only of their own salary but that of all other field employees as well.

This procedure becomes effective immediately, and telegraphic reports are to be submitted on the last day of this month (October, 1931) and similarly hereafter. Any suggestions that may be practicable with a view to developing a method which will meet the Comptroller's point of view and be as helpful as possible to all the field force will be gladly received.

M. A. McCall
Principal Agronomist in Charge

UNITED STATES DEPARTMENT OF AGRICULTURE

Director of Personnel and Business Administration

P.B.A. Circular No. 185 October 2, 1931

Certification of Payrolls

A communication to the department from the Comptroller General of September 7, A-27784, contains the following:

> In the Bureau of Animal Industry and in some of the other bureaus of the Department, pay rolls for field service employees are prepared in the several field offices and in order that such employees may receive their salary checks not later than the last day of the month to which they pertain or the first day of the succeeding month, such pay rolls are prepared and certified by the respective field administrative offices sufficiently in advance of the close of each month to permit the rolls to be forwarded to Washington, D. C., to be administratively audited and approved for payment, and to permit the disbursing officer to draw the checks called for thereon and to mail such checks in time for them to be delivered to the payees on the day above stated. Under such practice the pay rolls of field offices on the Pacific coast must be prepared and certified at some time between the 15th and 20th day of each month. For less distant stations the pay rolls are prepared and certified on a proportionately later date.
>
> For the purpose of a proper audit it is the view of this office that all vouchers must be properly and lawfully certified by a properly constituted administrative authority and since the certificate on all Government pay rolls and vouchers is such that no provision thereof can be certified in advance of the services listed thereon, the practice of the department as herein related with respect to field pay rolls should be immediately discontinued.

In view of this requirement no certification will hereafter be made of pay rolls or pay vouchers of employees of this department, whether in Washington or in the field, prior to the expiration of the period covered, and no payment of compensation will be made by cash or check until the disbursing officer has received rolls or vouchers so certified. Bureaus may follow either of two courses: rolls may be prepared in the field and certified by the proper field officer not earlier than the last working day of the pay period, and transmitted to the bureau in Washington;

or rolls prepared in the field and forwarded uncertified to the bureau in Washington prior to the end of the pay period, or field rolls prepared in the bureau in Washington, may be certified not earlier than the last working day of the period by the proper bureau officer in Washington on the basis of written or telegraphic advice from the proper officer in the field, placed in course of transmission not earlier than the last working day of the period, to the effect either that all employees carried on the roll were in a pay status during the period or specifying exceptions. There should be no certification in Washington without such positive information from the field; and any existing arrangement or understanding that advice as to pay rolls would be necessary only where there were no changes in pay status should be terminated.

Since the disbursing officer will ordinarily prepare checks in the order of receipt of rolls, bureaus should so far as practicable arrange their sets of rolls so that the more distant points will be first reached.

(Signed) W. W. Stockberger

Director.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

Coastal Plain Experiment Station, Tifton (Corn Breeding, H. S. Garrison) (Oct. 17)

The oat nursery was sown on October 14 and 15.

A germination test of next year's corn-breeding material was planted October 8 to 10. This seed was planted in the field in well-prepared soil. Although the counts have not yet been made, it appears today that nearly every one of the 1,840 ears was up with from 90 to 100 per cent germination.

The long, dry, hot period was broken on October 7 by a rainfall of 1.58 inches.

Mr. Chambliss visited the Station on October 16. He made notes on and harvested some of the upland rice varieties.

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (Oct. 14)

The maximum temperature for September was 95°, and 90° or above was recorded on 24 days. The lowest minimum was 52°. The total precipitation was 1.59 inches, recorded on 9 days. The 20-year average precipitation for September is 4.19 inches.

Farm operations went forward with hardly any interruptions. Early maturing rice was threshed under very favorable conditions, and many of the late-maturing varieties were harvested the latter half of the month.

Diseases developed rapidly on Blue Rose rice, causing leaves and culms to die; the panicles were also attacked in most fields. In some instances there was much light and damaged grain.

Many of the increase and rotation plots have been harvested, and the majority of the rices in the nursery have matured.

Mr. Jenkin W. Jones arrived on October 2. He spent several days making selections from the breeding plots and inspecting the Station plots as well as the rice fields in the vicinity.

Dr. E. C. Tullis, of Fayetteville, Ark., arrived on October 5. He spent several days examining the plots devoted to rice diseases and inspecting commercial fields.

Mr. H. M. Beachell, of Beaumont, Tex., was at the Station August 16 and 17. He made selections from the rice breeding plots and inspected Station plots and commercial rice fields.

ARKANSAS

Rice Branch Experiment Station, Stuttgart (Rice Production and Improvement, C. R. Adair) (Oct. 9)

The winter-oat nursery was sown on October 7 and 8. Seeding was delayed owing to a lack of moisture in the soil. A light shower of 0.22 of an inch fell on the 6th and 7th, which greatly improved the condition of the soil for planting, but more rain is needed almost immediately.

Twenty-seven of the leading varieties and strains of fall-sown oats of the 80 sent here last year by the oat project, were planted in triplicated 3-row plots, systematically replicated with a check of the variety Lee every tenth plot. The remainder of the 80 varieties and strains and the 33 hybrids were sown in triplicated single rows with a check of Lee every tenth row. The uniform winter hardiness and oat rust nurseries likewise have been sown. In addition, some strains of winter oats from the University of Arkansas College of Agriculture were sown in nursery rows at Stuttgart.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger) (Oct. 16)

The weather has been cooler since October 1. A number of light showers have put the wheat soil in good condition but have interfered with sorghum harvesting.

Seed heads of sorghums are being selected and harvested but this work is only well started.

The maximum temperature for the first half of October was 97° on the 6th, the minimum 44° on the 14th. There was 0.89 of an inch of precipitation recorded in six measurable showers.

NEBRASKA

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson) (Oct. 15)

Rainfall totaling about five inches fell in the past month. Consequently, winter wheat has prospects of going into the winter in excellent shape.

Seeding at the Station is virtually completed except for bunt and date-of-seeding experiments. Unusually warm weather has been the rule so far, so that wheat has made rapid growth.

Considerable wheat in this section was sown this year one to two weeks ahead of the normal "fly free" date. Hessian fly is reported as being very scarce this fall, so the early seeding may prove satisfactory this year.

SOUTH DAKOTA

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden) (Oct. 13)

Average yields and test weights of spring-wheat varieties grown in triplicate 50th-acre plots at Redfield, S. Dak., 1931

Class and Variety	C.I.No.	Yield (Bu. per acre)	Weight (Lbs. per bu.)
White			
Quality	6607	14.3	53.8
Hard Red Spring			
Supreme	8026	13.2	53.8
Marquis	3641	12.0	53.5
Double Cross Minn.2303	10003	11.7	46.6
Reward	8182	11.5	55.0
Kota	5878	11.2	55.0
Reliance	7370	10.8	55.6
Double Cross Minn.2305	10005	10.7	55.8
Marquis x Kota N.D.1656.85	8385	10.4	53.6
Ceres	6900	9.5	54.6
Marquis x Kota N.D.1656.48	8004	9.0	55.1
Marquillo	6887	8.7	52.5
Marquis x Emmer H-44	8177	6.5	49.6
Hope	8175	3.8	50.0
Power	3697	3.2	52.8
Durum			
Akrona	6881	13.2	53.6
Mindum	5296	12.0	56.5
Acme	5284	10.8	57.8
Nodak	6519	7.5	57.2
Kubanka	1440	7.0	54.7

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) (Oct. 16)

Climatic conditions in the first half of October were nearly ideal for fall work. The 3.11 inches of rain that fell in September left the fields in good condition for plowing and the 0.16 of an inch of rain that fell this month was not sufficient to slow up field work. Days have been mostly warm and night temperatures rather low.

Frosts occurred on October 7, 10, and 15. The lowest temperature so far in October was 27 degrees on October 7. The maximum was 82° on October 1. The frost-free period for 1931 was abnormally long (140 days), compared with the 129-day average for the last 17 years.

Winter wheat and volunteer spring wheat are making good growth. The frosts so far have not been severe enough to cause any noticeable damage in them.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) [Oct. 15]

Average acre yield of 12 flax varieties grown in triplicated plots at the Dickinson Substation, Dickinson, N. Dak., 1931

Variety	C.I.No.	Yield (Bu. per acre)
Redwing	320	0.8
N. D. R.114	13	0.8
N. D. 40034	---	0.3
Bison	389	0.3
Newland	188	0.3
Sib 206	473	0.2
Rio (Long 79)	280	0.1
N. D. R. 52	---	0.1
Linota	244	0.1
N. D. 40046	492	0.1
Buda	326	0.1
Hybrid 19 x 112	383	0.1

The very low yields of flax were due partly to the thin stands caused by freezing at time of emergence but mainly to the extremely hot and dry conditions. All plots in the date-of-seeding experiment yielded less than one bushel per acre.

MONTANA

Montana Agricultural Experimental Station, Bozeman (Austin Goth) (Oct. 13)

There is snow in the mountains and a number of killing frosts have been recorded. The growing season was considerably longer than it was last year and about ten days longer than average. The season was characterized by hot, dry weather. The number of windy days was noticeably greater than usual.

Winter-wheat varieties in both the plots and nurseries are making satisfactory fall growth despite the dusty condition of the soil at seeding time. Many farmers in the Valley who did not sow their winter wheat the second two weeks of September have seeded since rain fell late in September. Cool, damp weather since seeding has built up optimum conditions for heavy bunt infection. Yields of all crops at this Station are a few bushels lower than those of last year. Potatoes were particularly reduced in yield and quality by the hot, windy weather.

The inclosed table presents some of the data secured on a selected list of spring-wheat varieties grown at this Station.

Average yields and test weights of spring-wheat varieties grown in triplicate 40th-acre plots at the Agricultural Experiment Station, Bozeman, Mont., 1931

Variety	Nursery No.	C.I.No.	Test Weight (Lbs. per bu.)	Yield (Bu. per acre)
Reliance	---	7370	61.9	70.1
Supreme	---	8026	60.8	67.7
Ceres	---	6900	62.3	62.4
Hope	---	8178	59.5	61.6
Marquis	---	3641	61.1	58.7
Marquillo	---	6887	59.3	55.5
Reward	---	8182	63.6	48.7
Marquis x Hard Federation	666	----	61.1	71.1
Do	649	----	62.1	69.1
Do	708	----	60.7	66.8
Do	657	----	59.1	66.1
Do	-653	----	58.0	55.4
Marquis 10B, Mont. No. 511	---	----	62.8	59.9
Mindum	---	5296	62.3	58.7
Nodak	---	6519	60.2	52.1
Kubanka	---	1440	60.7	48.9

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (Cereal Agronomy, Harland Stevens) (Oct. 6)

Weather conditions were very favorable in September, with the exception of two windstorms. Temperatures were slightly above the average, with a maximum of 77° as compared with a 19-year average of 75°. The minimum was 40°, compared to 37.3° as the average for the same period.

The first killing frost occurred on September 11, about 4 days earlier than usual. The precipitation for September was 0.83 of an inch, which is slightly higher than normal.

Crop yields in general have been somewhat below the average both on dry and irrigated land. The yields of grain on the dry lands are presented in the following table.

Average yield of winter-wheat varieties grown in the uniform nursery at Rockland, Idaho, 1931

Variety	C.I.No.	Yield (Bu. per acre)
Oro	8220	16.9
Kharkof	1442	16.9
Turkey Wash. No. 326	6175	16.1
Hussar x Hoenheimer Oreg. No. 3025	10068	16.0
Turkey (local)	----	15.8
Smithsonian	10022	15.6
Hybrid 128 x Fortyfold	10066	15.5
Triplet	5408	15.3
Fortyfold Sel. No. 54	10064	15.2
Albit	8275	15.2
White Odessa x Hard Federation No.1003	10065	14.9
Ridit	6703	14.7
Fortyfold	4156	14.6
Sherman	4430	14.5
Argentine	10061	14.4
Hybrid 128	4512	14.2
Fortyfold Sel. No. 43	10063	13.6
Fortyfold Sel. No. 29	10062	13.0
Jenkin	5177	12.5
Fortyfold x Federation	8247	12.2
Hussar x Hoenheimer Oregon No.3024	10067	10.9
White Winter	5219	10.9

OREGON

Pendleton Field Station, Pendleton (Cereal Agronomy, J. F. Martin) (Oct. 15)

Cool weather has prevailed for the past few weeks. The maximum temperature for the past 30 days was 87° F. on October 1. A minimum of 20° was reached on October 8 and 9.

Farmers still are hoping for moisture before seeding, and many may wait until spring if conditions do not improve within a few weeks. A total of 0.14 of an inch of rain fell on October 5, but all traces were soon removed by a strong wind.

Table 1 gives yields, percentages of stand, and percentages of bunt resulting from several methods of seed treatment for the control of bunt. Heavily infected seed of Fortyfold x Federation, C. I. 8247, was used as a test variety. Seed treated by each method was grown in duplicated 40th-acre plots. Head counts were made at five locations throughout each plot. Yield data were taken on the series of plots, and a 500-gram sample from each plot was used to determine the amount of smut in the grain.

Certain treatments affected the stand considerably, but because of a favorable spring this was not reflected in the yields. The plots which received no treatment were lower in yield of grain, however. The best control was obtained where the grain was first treated with formaldehyde, allowed to dry, and then coated with copper carbonate. Percentages of smut in the threshed grain correlate fairly closely with those obtained from head counts, when the difficulties of the threshing operation are considered.

Table 1.-Yields, percentages of stand, and percentages of bunt resulting from several methods of seed treatment for the control of bunt at the Pendleton Field Station, Pendleton, Oreg., 1931

Treatment	Stand (per cent)	Yield[a] (Bu. per acre)	Percentage of bunt[a]	
			Heads	Grain
Check (no treatment)	100	27.3[b]	39.4[b]	6.0[a]
Coppercarbonate (Chipman Chemical Co., 50 per cent Cu)	90	37.3	5.8	1.1
Coppercarb (50 per cent Cu)	85	40.0	7.9	1.3
Coppercarb (18 per cent Cu)	85	41.4	6.7	1.1
Dupont No. 68	85	43.7	12.8	2.4
Ceresan	95	38.0	16.3	2.9
Check	100	31.3	45.0	7.1
Formaldehyde (1 pt. to 40 gal.)	85	39.0	8.2	1.2
Formaldehyde (1 pt. to 50 gal.) and coppercarbonate	75	43.2	2.6	0.4
Copper sulphate (1 lb. to 5 gal.)	25	37.0	12.9	1.3
Copper sulphate (1 lb. to 5 gal.) and lime	75	46.0	5.8	0.8
Copper sulphate (1 lb. to 10 gal.)	50	38.3	22.0	3.5
Copper sulphate (1 lb. to 10 gal.) and coppercarbonate	25	39.7	4.6	1.1
Soaked in water and coppercarbonate	40	45.0	6.8	1.4
Check	100	34.3	42.6	6.2

[a] Average of two series

[b] One series only

CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

Vol. 23 November 15, 1931 No. 27
Personnel (Nov. 1-15) and Field Station (Oct. 16-31) Issue

The issue of the Cereal Courier of October 31 (Vol. 23, No. 26) was omitted.

COURIER POLICIES

The Cereal Courier is strictly a house organ of the Division of Cereal Crops and Diseases and is issued only to distribute information which should be circulated among its staff. It is intended to serve in the exchange of professional information useful in promoting the work of the Division, for the transmission of administrative information, or for any other informational service benefiting the Division program. To accomplish these ends requires the help and responsible cooperation of every staff member. Every individual must report suitable items from his station.

The usefulness of the Cereal Courier is determined entirely by the number and character of items received from workers in the field and in Washington. Some members of the staff have contributed little or nothing to the Courier. Correspondence with field men has shown that all are interested in the Cereal Courier and want it continued. This means an obligation to help make it useful and successful. Most members of the staff recognize this obligation, and have responded with many valuable suggestions regarding the Courier and its improvement.

The Courier is not to be regarded as a publication, and data in it must not be cited as having been published. Information reported in the Courier is presented only for the benefit of members of the staff, which places an obligation on each individually to see that no one uses the facts to gain a professional advantage over the person furnishing the information. A free interchange of information and ideas among scientific workers is most helpful in advancing research. The Division wishes to foster a spirit of helpfulness on the part of its staff and also an absence of suspicion of other workers. A free interchange of information is desired, but this obligates meticulous care in using ideas or facts supplied by others.

REPORTS

Regular reports of items suitable for the Courier are expected from each project at a given station except where it is evident that there is nothing of general interest to report. This latter should be indicated to the Washington office. Where several men are engaged in the same project at a given station, the man in charge is responsible for sending in reports unless he designates some one else for the task. Reports should be mailed not later than the first and fifteenth of each month from April to October, inclusive, and the first of each month during the remainder of the year. All typewritten reports must be in double space.

CONTENT OF REPORTS

(1) Seasonal progress of the cereal crops in the locality, including field operations. Reports of maximum and minimum temperatures and of rainfall are of general interest only in so far as they affect the cereal crops. Reporters should limit the discussion of weather largely to features which affect crop conditions. Reports of field work on the experiment stations should be limited to operations indicative of seasonal progress or which have a bearing upon the results of field experiments.

(2) The occurrence, pathogenicity, prevalence, severity and spread of cereal diseases.

(3) Agronomic and pathologic data from varietal or cultural experiments. Yield data from nurseries containing large numbers of unnamed hybrids or selections ordinarily should not be reported.

(4) Results of greenhouse and laboratory experiments. These should be presented as news items and ordinarily should not include information of a very preliminary nature or more than very limited data.

(5) Reports of progress such as the spread of new or improved varieties, new methods of disease control, new farm practices, new methods of conducting experiments, and new laboratory or field equipment. Many such facts in the past have not been brought to the attention of the staff until they have become generally known throughout the country.

(6) Advance announcements of demonstration or field days at the experiment stations. This will facilitate the planning of trips either in order to be present, or to avoid a visit when field men are already fully occupied.

MATERIAL NOT SUITABLE FOR THE COURIER

There are a few types of material of general interest but which are not suitable for the Cereal Courier:

(1) Data from field or nursery experiments covering results obtained for several years or at several stations will not be included in the Courier. Such reports may be mistakenly considered equivalent to publication, and Department policies governing house organs will not permit their inclusion. These summarized data, if not to be printed, can be distributed as mimeographed circulars prepared by the Division.

(2) In order to protect the individual investigator, it is suggested that new data which are to be published in the near future should be omitted from the Cereal Courier reports. If it is desired to report progress on some new line of work on which priority of publication is important, the Courier reports should be restricted to statements of general accomplishment rather than reports of detailed data.

COMMITTEE IN CHARGE OF THE COURIER

A committee to have charge of the Courier has been designated as follows: Dr. J. H. Martin, Chairman, Dr. H. B. Humphrey, and Mrs. Anna H. B. Kinney, editor. Suggestions should be sent to this committee.

M. A. McCall
Principal Agronomist in Charge

PERSONNEL ITEMS

Mr. C. E. Chambliss returned to Washington on October 26 from a four-week trip to Illinois, Texas, Louisiana, Alabama, Georgia, Florida, and South Carolina in the interests of cooperative rice investigations.

Dr. A. G. Johnson returned to Washington on November 2 after spending two weeks in Arkansas, Illinois, Indiana, and Wisconsin in the interests of cooperative cereal-disease experiments.

Mr. J. W. Jones returned to Washington on October 31 from a two-month trip to the rice area in Louisiana, Texas, California, and Arkansas. In Louisiana and Texas he assisted in making plant selections from hybrid material grown at the rice experiment stations at Crowley, La., and Beaumont, Tex. At the Biggs Rice Field Station in California he assisted with the harvest and continued some genetic studies being conducted there.

Mr. S. C. Salmon returned to Washington on October 24 from a week's trip to points in Pennsylvania, New Jersey, Delaware, and New York in the interests of cooperative wheat research.

Mr. Virgil H. Welch was appointed agent, effective November 1, to assist in the cereal investigations conducted by this Division in cooperation with the Nebraska Agricultural Experiment Station, at Lincoln, Nebr.

VISITORS

Mr. P. R. Kelbaugh, of the Division of Agricultural Cooperation of the Pan American Union, was a caller in the Division on November 7 to procure information on diseases of wheat in Columbia, S. A.

MANUSCRIPTS AND PUBLICATIONS

56 A manuscript entitled "Recurving in Sorghums," by John H. Martin, was approved on October 29 for publication in the Journal of the American Society of Agronomy.

57 An article entitled "Seed Treatment with Chemical Dusts and Formaldehyde for Smut Control in Oats," by V. F. Tapke, was approved on November 9 for submittal to Phytopathology.

58 A manuscript entitled "Effects of Certain Environmental Factors on Stripe Disease of Barley, and its Control by Seed Treatment," by R. W. Leukel, J. G. Dickson, and A. G. Johnson, was submitted on November 10 for publication in the Technical Bulletin series.

U. S. Dept. Agr. Circular 182 entitled "Stinking Smut (Bunt) in Wheat and How to Prevent It," by R. J. Haskel, Senior Plant Pathologist, Office of Cooperative Extension Work, Extension Service; Robert W. Leukel, Associate Pathologist, Division of Cereal Crops and Diseases, Bureau of Plant Industry; and E. G. Boerner, Senior Marketing Specialist, Grain Division, Bureau of Agricultural Economics, has been received from the Government Printing Office, bearing date of September, 1931.

Technical Bulletin No. 267 entitled "Experiments on Hybrid Vigor and Convergent Improvement in Corn," by Frederick D. Richey and George F. Sprague, was received from the Government Printing Office on October 11.

Farmers' Bulletin No. 1679 entitled "Pop Corn," by Arthur M. Brunson and Carl W. Bower, was received from the Government Printing Office on October 26. (Cooperation between the Division of Cereal Crops and Diseases and the Kansas Agricultural Experiment Station.)

The article entitled "Heterothallism in Puccinia triticina," by Ruth F. Allen, appears in Science (n. s.) 74(1923): 462-463. November 6, 1931. (Cooperation between the Division of Cereal Crops and Diseases and the California Agricultural Experiment Station.)

ADMINISTRATIVE NOTES

ATTENDANCE AT SCIENTIFIC MEETINGS

Because of the necessity of reducing travel costs, it has been ruled inadvisable to pay travel and incidental expences of personnel for attendance at scientific meetings during the present season. It has been indicated that attendance on salary probably will be approved for those paying their own expenses. Anyone desiring to attend meetings on this basis should transmit a request beforehand at as early a date as possible.

UNITED STATES DEPARTMENT OF AGRICULTURE

Office of the Secretary

November 7, 1931

MEMORANDUM NO. 621

Subsistence Allowances.

In order to reduce expenditures and conserve appropriations, effective November 15, 1931, and continuing until further notice, the maximum per diem allowance payable in the Department in lieu of subsistence expenses will be $5.00 and the maximum allowance for actual expenses of subsistence will be $6.00 per diem. These maximum rates will apply to all officers and employees of the Department when in a travel status in the continental United States.

For official travel beyond the limits of the continental United States a per diem of not to exceed $6.00 in lieu of subsistence expenses or actual subsistence expenses not to exceed an average of $7.00 per diem may be allowed.

(Signed) Arthur M. Hyde

Secretary.

Note: Annual letters of authority will be amended to comply with the above memorandum.

H. S. Smith.

AMERICAN SOCIETY OF AGRONOMY

The annual meeting of the American Society of Agronomy will be held in Chicago, at the Stevens Hotel, November 19 and 20, 1931.

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Exerpiment Farm, Rosslyn, Va., are in cooperation with State agricultutal experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

State College of Agriculture, Athens (Cereal Agronomy, R. R. Childs) (Oct. 28)

Fall seeding has been somewhat delayed by the very dry weather in this section, but it is now about completed. However, much of the grain was sown in very dry soil and will not germinate until there is rain. Some of the earlier seeded grain is up to a fair stand but it does not look very well.

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) [Oct. 7]

Weather conditions in October were ideal for all field work.

The maximum temperature was 91°, and a temperature of 90° or above was recorded on 4 days. The minimum temperature was about 37°.

The total precipitation for October was only 1.62 inches, recorded on 8 days. The 21-year average precipitation for October is 3.91 inches.

Rice threshing on the Station was completed the latter part of the month, and most soybean plots have been harvested.

Yields on the average were better than those of last year but in the main far below those of past years.

Nearly all the commercial fields of rice were threshed by the end of October. The entire crop was harvested under ideal conditions; however, yields were low, and much of the rice was of poor quality, apparently due to the general weather conditions during the growing period, and to diseases.

Prices for rice have been very low, but there was some advance toward the end of the month.

Among the Station visitors were Mr. C. E. Chambliss, from October 5 to 10, inclusive, and Drs. C. T. Dowell and C. I. Bray, of the Louisiana State University, October 6 and 19.

Note: Messrs. J. W. Jones, E. C. Tullis, and H. M. Beachell, were at the Station in September and not in October, as reported in the Cereal Courier of October 20.

ARKANSAS

Rice Branch Experiment Station, Stuttgart (Rice Production and Improvement, C. R. Adair) (Nov. 2)

Weather conditions this fall have been ideal for harvesting the rice crop. In September there was only 0.59 of an inch of rain, and in October 1.89 inches. This small amount of precipitation during the harvesting and threshing season made it possible to get the crop threshed without loss from rain. The first frost occurred October 31, (30° F.) All the rice grown in the nursery had matured before frost. The latest maturing varieties were harvested October 22.

The following table presents the average yield and other agronomic data for 15 varieties of rice grown in triplicate 3-rod-row plots in 1931.

Average yield and other agronomic data for 15 varieties of rice grown in triplicate 3-rod-row plots at the Rice Branch Experiment Station, Stuttgart, Ark., 1931

Variety	C.I.No.	Days from seeding to maturity	Average yield per - Row (grams)	Acre (bushels)	Acre (pounds)
Colusa	1600	120	561	72.9	3,280.0
Caloro	1561-1	130	552	71.8	3,231.0
Acadia	1988	140	526	68.4	3,078.0
Fortuna	1344	145	487	63.3	2,848.5
Early Prolific	----	125	470	61.1	2,749.5
Early Blue Rose	----	125	462	60.0	2,700.0
Storm Proof	----	126	460	59.8	2,691.0
Edith	----	125	454	59.0	2,655.0
Lady Wright	----	126	449	58.4	2,628.0
Early Rose [1]	----	124	416	54.1	2,434.5
Early Wright [1]	----	124	414	53.8	2,421.0
Supreme Blue Rose [2]	----	146	413	53.7	2,416.5
Delitus	1206	130	367	47.7	2,146.5
Mortgage Lifter	----	126	339	44.0	1,980.0
Honduras	1643	126	321	41.7	1,876.5

[1] Average yield from 7 rows [2] Average yield from 17 rows

GREAT PLAINS AREA (South to North)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins)
[Nov. 3]

The drought that prevailed throughout the late summer continued into the first 10 days of October. Temperatures were very high, the maximum of 96° being recorded on two days, - October 4 and 7. On the 12th the drought was broken by a rain of 2.16 inches, nearly all of which was effective. The total rainfall for October was 4.16 inches, which is slightly above normal. However, the deficiency for the period since January 1 is still 4.86 inches.

The dry condition of the seed bed made it impossible to sow at Denton the first part of the month. Wheat seedings were made at Price Memorial College during the week of October 17, and consisted of a varietal experiment of 16 varieties and an acre of nursery. The seed bed was dry at the time of sowing, but on October 22 there was a good rain. It is reported that the grain is emerging to satisfactory stands.

The varietal experiment with wheat at Denton was sown in dry soil, but as rain occurred soon after seeding the varieties emerged in due time. Because of the treatment for loose smut the germination of several varieties was so poor that they had to be reseeded. The varietal experiment with fall oats and barley was sown under ideal conditions on October 19 and 20. Although seeding was interrupted several times by showers, all of the fall nursery was sown during the last 10 days. The plants are now emerging and growth conditions are favorable.

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger) (Nov. 2)

The weather of the last half of October was favorable for harvesting sorghums. The last date-varietal experiment with sorghums and the milo varietal test were harvested. Seed heads have been selected and harvested as rapidly as possible. This work is not yet completed.

The first frost this fall occurred on October 30, with a temperature of 25°.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens) (Nov. 2)

The winter-wheat varietal plots were seeded on October 17, and the replicated rod-row yield nursery on the 19th and 20th. With a good supply of moisture in the first foot of soil, they have emerged to good stands. Subsoil moisture is somewhat lacking this fall, compared to that of 1930. All other nursery material has been seeded. Seedings were made in the rate-and-date-of-seeding experiment on September 26, October 1, and October 16. The first date of seeding was about 10 days later than schedule because of lack of moisture.

COLORADO

United States Dry-Land Field Station, Akron (Wheat Improvement, J. J. Curtis) (Nov. 1)

The drought continued through September and October and although the winter-wheat nursery and the winter-wheat varietal experiment were sown about the middle of September, they have so far failed to emerge.

Corn from the varietal plots has been husked and stored in sacks until dry enough to shell and weigh. Grain sorghums will be threshed the coming week if weather permits.

The precipitation for October was 0.61 of an inch.

NEBRASKA

North Platte Substation, North Platte (Cereal Agronomy, N. E. Jodon) (Oct. 27)

Yields of grain-sorghum varieties grown at the North Platte Substation, North Platte, Nebr., 1931

Variety	C.I.No.	Yield (Bu. per acre)
Milo		
Dwarf Yellow	332	35.4
Custer	919	32.1
Kafir		
Dawn Selection	904	39.7
Club	901	32.6
Yellow	902	23.5
Feterita		
Standard	182-1	22.6
Miscellaneous		
Modoc	905	38.7
Dwarf Freed	971	32.6
Pink kafir x Freed (Tribune 12)	---	38.4
" " " " (Tribune 14)	---	25.9
" " " " (Tribune 36)	---	33.9
Dwarf Feterita x Smith milo-kafir (H. C. 301)	---	35.4
Corn		
Substation White	---	20.8

Yields of proso varieties grown at the North Platte Substation, North Platte, Nebr., 1930-31

Variety	C.I.No.	Yield (Bu. per acre) 1/		
		1930	1931	Average
Early Fortune	23	6.7	9.3	8.0
Turghai	31	8.9	10.4	9.7
Yellow Manitoba	101	12.0	11.2	11.6

1/ 56 pounds per bushel.

NORTH DAKOTA

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard) [Oct. 28]

Percentage of stem rust, test weight, and yield per acre of 25 wheat varieties and hybrid strains grown in the North Dakota uniform nursery Mandan, N. Dak., 1931

Variety or Cross	State No.	Nursery No.	C.I. No.	Stem rust (Per ct.)	Test weight (Lbs.)	Yield (Bu. per acre)
Mindum	--	--	5296	12	61	16.6
Marquis x Kota	1656.106	--	--	2	61	16.6
Hope x Reliance	--	1110	--	2	61	14.8
Double Cross	II-21-83	--	--	15	60	14.5
Hope x Ceres	--	1099	--	T	59	14.3
Hope x 1656.97	N.D.2421	--	--	T	60	14.3
Double Cross	II-21-80	--	--	13	59	14.2
Kota x Webster	H-209	--	--	5	61	14.2
Hope x Reliance	--	1140	--	T	60	14.1
Marquis 1/	--	--	3641	25	61	13.6
Ceres	--	--	6900	8	60	13.5
Hope x 1656.81	N.D.2331	--	--	T	58	13.4
Double Cross	II-21-86	--	--	13	60	13.2
1656.97 x Hope	N.D.2326	--	--	5	60	13.1
Double Cross	Minn. 2303	--	10003	5	60	12.9
Marquis x Kota	1656.48	--	--	5	60	12.8
Hope x Reliance	--	1129	--	T	60	12.8
Hope x 1656.81	N.D.2332	--	--	T	58	12.6
Hope x Ceres	--	1127	--	T	58	12.4
Double Cross	Minn. 2315	--	--	8	60	12.3
1656.81 x Hope	2325	--	--	T	59	12.1
Hope x Ceres	--	1098	--	2	59	12.0
Hope x Reward	2422	--	--	5	60	11.7
Hope x Reliance	--	1131	--	2	61	11.6
Mindum x Pentad	--	--	8882	2	60	10.4

1/ Average of 2 checks

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (Nov. 4)

The weather in October was generally mild and favorable for outdoor work. Harvesting of the flax nursery was completed October 15 except for rows in the after-ripening-loss experiment of which some were harvested October 31; the remainder are to be harvested November 15.

Cleaning of the flax seed from plots was completed October 23. Acre yields from flax in varietal plots are as follows:

Variety	C. I. No.	Yield (Bu. per acre)
Sel. 167 - 254	475	7.0 ± 0.6
Sel. C. I. 119	474	6.6 ± 0.4
N. D. 40034 (B444)	491	6.5 ± 0.3
Rio (Long 79)	280	6.4 ± 0.6
Bison	389	6.3 ± 0.3
Sel. Hyb. 160 x 179	476	5.8 ± 0.5
Rio x Buda (Bulk)	-	5.2 ± 0.6
Hyb. 19 x 112	478	5.1 ± 0.2
Slope	274	4.9 ± 0.9
Sib No. 206	473	4.6 ± 0.4
Buda x (19 x 112) (Bulk)	-	4.6 ± 0.8
Hyb. 160 x 179	496	4.5 ± 0.5
Linota	244	4.3 ± 0.3
Buda	326	4.3 ± 0.2
H 10-3-52-5	494	4.2 ± 0.3
H 11-2-59-1	495	3.7 ± 0.8
N. D. R. 114	13	3.5 ± 0.3
Redwing	499	2.6 ± 0.2
Com'l Argentine	488	2.4 ± 0.3
Safflower	-	10.9 ± 0.5 1/

1/ Bushel weight of safflower figured as 40 pounds

Average acre yields from three plots sown on each date of seeding are as follows:

Date of seeding	Yield (Bu. per acre)
April 20	0
April 30	0
May 9	3.3 ± 0.2
May 20	4.0 ± 0.4
May 29	1.7 ± 0.3
June 10	5.3 ± 0.6

The season in general favored late varieties and late seedings.

The harvested bundles of the flax nursery were moved indoors October 26. Threshing of this material probably will be completed this week except for the individual plant selections.

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) [Oct. 31]

Although the temperature dropped to 32° on three mornings in September, the first killing frost occurred on October 8, when a minimum temperature of 26° was recorded. The length of the frost-free period this year was 139 days, - from May 22 to October 8. The average frost-free period for this Substation is 117 days. There has been no snow this month, except a few flakes during the rainy period.

Except for the hot winds and lack of moisture during part of the summer, the growing season just ended was unusually favorable for corn in this State. This fact was strikingly revealed in the quality and number of corn samples exhibited in the State corn show held in Bismarck this week. Some excellent samples of corn were exhibited from those sections that grew but little else in the way of cereal crops because of the drought. The writer was privileged to help judge the corn exhibits. Prof. Clyde McKee of the Montana Agricultural College was the senior judge. Doubtless there will be a considerable increase in corn acreage in the State next year.

Sixteen varieties of corn were grown in plots at the Substation this year. These were husked on October 16 and the ears were weighed and samples hung up to dry for the final air-dried weight and yield determination. Yields were very good when compared with those of other cereal crops.

North Dakota Agricultural Experiment Station, Fargo (T. E. Stoa) [Oct. 15]

The following results were obtained from the spring-wheat varietal experiments conducted in 1931 at Fargo, Edgeley, and Williston. Rust came too late at Fargo and Edgeley to cause much damage. Hot weather caused premature ripening at Edgeley, and drought at Williston caused a near failure.

Percentage of stem rust, test weight per bushel, and yield of spring-wheat varieties grown in triplicate plots at the North Dakota Agricultural Experiment Station, Fargo, N. Dak., 1931

Class and Variety	C.I.No.	Stem rust (Per ct.)	Test weight (Lbs.)	Yield (Bu. per acre)
Hard Red Spring				
Reliance	7370	50	59.8	36.0
Marquis x Kota 1656.84	8004	T	58.1	35.6
Ceres	6900	7	58.7	35.0
Marquis x Kota 1656.48	10014	2	58.3	33.9
Double Cross, Minn.2303[1]	10003	0	59.8	33.5
Marquis x Kota 1656.85	8385	T	57.6	33.4
Marquis x Kota 1656.106	--	0	59.0	32.8
Botany 132	--	8	58.8	30.7
Marquis	3641	55	61.6	30.5
Montana King	8878	55	59.5	30.5
Double Cross, Minn.2305[1]	10005	2	59.9	29.5
Power	3697	65	60.7	29.4
Marquillo	6887	T	58.3	29.2
"Whiteman"	8379	20	58.3	28.6
Supreme	8026	65	61.4	28.4
H-44	8177	0	55.9	27.5
"Missouri Valley Special"	----	60	59.3	27.2
Marvel	8876	10	59.0	26.5
Hope	8178	0	56.1	26.3
Reward	8182	40	62.3	26.0
Durum				
Akrona	6881	5	60.8	36.9
Mindum	5296	2	62.0	35.3
Kubanka Sel. 132	8383	T	61.5	34.7
Monad	3320	T	60.5	33.9
Mindum x Pentad	8882	T	60.8	33.5
Kubanka	1440	3	61.0	32.8
Pentad	3322	T	61.2	32.2
Nodak	6519	3	60.2	31.7
N.D.R. 216	--	3	60.4	29.9
Golden Ball	--	7	57.8	24.3

[1] Kanred-Marquis x Marquis-Iumillo

Edgeley Substation, Edgeley (O. A. Thompson)[Oct. 28]

Yield, percentage of stem rust, and test weight per bushel of spring-wheat varieties grown in triplicate plots at Edgeley, N. Dak., 1931

Class and Variety	C.I.No.	Stem rust (Per ct.)	Test weight (Lbs.)	Yield (Bu. per acre)
Hard Red Spring:				
Marquis x Kota 1656.85	8385	0	50	15.7
Double Cross, Minn.2303[1]	10003	T	51	15.6
Double Cross Minn. 2305[1]	10005	2	55	13.7
Marquis x Kota 1656.84	8004	T	50	13.3
Marquis x Kota 1656.48	10014	T	51	13.0
Marvel	8876	3	57	12.5
Reliance	7370	15	52	12.3
Ceres	6900	2	51	11.7
Marquillo	6887	T	48	11.7
H-44	8177	T	48	11.6
"Whiteman"	8379	10	50	11.3
Marquis	3641	15	52	10.3
Reward	8182	5	55	10.1
Montana King	8878	15	47	9.9
Kota	5878	2	51	9.9
Supreme	8026	15	52	9.7
Hope	8178	0	45	8.5
Durum				
Monad	3320	T	56	11.3
Mindum	5296	2	56	10.5
Pentad	3322	0	57	10.5
Akrona	6881	1	56	9.8
N.D.R. 216	--	1	54	9.2
Kubanka	1440	T	55	9.0
Kubanka Sel. 132	8383	T	56	8.8
Nodak	6519	T	53	8.5

[1] Kanred-Marquis x Marquis-Iumillo

Williston Substation, Williston (E. G. Shollander) [Oct. 28]

Yield and test weight per bushel of sprong-wheat varieties grown in triplicate plots at Williston, N. Dak., 1931

Class and Variety	C.I.No.	Test weight (Lbs.)	Yield (Bu. per acre)
Hard Red Spring			
Ceres	6900	60.0	6.5
Marquis x Kota 1656.84	8004	60.0	6.1
Marquis x Kota 1656.48	10014	60.0	5.4
Montana King	8878	57.5	4.4
Renfrew	8197	54.0	4.4
Hope	8178	56.0	4.3
Marquis (Mitchell)	--	58.0	4.3
Reliance	7370	60.5	4.3
Marquis	3641	58.0	4.3
Supreme	8026	59.0	3.3
Double Cross Minn.2305[1]	10005	60.0	3.2
Reward	8182	59.0	3.2
Ruby	6027	59.0	3.1
Double Cross Minn.2303[1]	10003	57.0	2.9
Marquillo	6887	56.5	2.7
"Missouri Valley Special"	--	58.5	2.6
Durum			
Nodak	6519	59.0	5.4
Mindum	5296	59.0	3.6
Monad	3320	59.0	3.6
Kubanka	1440	59.0	3.4

[1] Kanred-Marquis x Marquis-Iumillo

North Dakota Agricultural Experiment Station, Fargo (L. R. Waldron) (Oct. 28)

A cooperative uniform North Dakota nursery was conducted this year for the first time. This nursery consisted of 25 spring-wheat varieties and hybrid strains. These were grown at the Fargo, Edgeley, Langdon, Mandan, Hettinger, Dickinson, and Williston stations. Because of the drought the nursery at Williston did not emerge. The more important results from the Fargo, Edgeley, and Hettinger nurseries are shown in the following tables. Low yields from Hope hybrids are the most striking results. These data indicate that Hope hybrid yields show their inferiority under conditions of drought and heat and under conditions where Hope shows its inferiority.

Percentage of stem rust, test weight per bushel, and yield of 25 spring-wheat varieties and hybrid strains grown in the North Dakota uniform nursery, at Fargo, N. Dak., 1931.

Variety or Cross	C.I. No.	Station No.	Nursery No.	Stem rust (per ct.)	Test weight (Lbs.)	Yield (Bu. per acre)
Kota x Webster	--	H-209	--	T	60.0	40.0
Double Cross Minn.2303[1]	10003	--	--	T	59.0	38.1
Mindum	5296	--	--	3	62.0	37.6
Marquis x Kota	--	1656.106	--	T	60.0	36.6
Double Cross[1]	--	II-21-86	--	7	58.0	35.7
Mindum x Pentad	8882	--	--	1	--	34.2
1656.97 x Hope	--	N.D.2326	--	T	59.0	34.0
Ceres	6900	--	--	2	60.0	32.9
Double Cross[1]	--	II-21-83	--	10	59.0	32.2
Hope x Ceres	--	--	1098	T	58.0	31.7
Double Cross[1]	--	II-21-80	--	T	59.0	31.6
Marquis x Kota	--	1656.48	--	T	58.0	31.5
Hope x 1656.97	--	N.D.2421	--	T	58.0	31.4
Hope x 1656.81	--	N.D.2332	--	T	58.0	30.9
Double Cross[1]	--	Minn.2315	--	1	59.0	30.2
1656.81 x Hope	--	N.D.2325	--	T	57.0	29.4
Hope x Reward	--	N.D.2422	--	2	58.0	29.1
Marquis	3641	--	--	23	60.0	29.0
Hope x 1656.81	--	--	--	T	57.0	28.7
Hope x Reliance	--	--	1131	0	58.0	27.4
Hope x Ceres	--	--	1127	0	58.0	27.3
Hope x Reliance	--	--	1110	T	58.0	27.3
Hope x Ceres	--	--	1099	T	57.0	27.2
Hope x Reliance	--	--	1140	0	58.0	25.9
Hope x Reliance	--	--	1129	T	57.0	23.5

[1] Kanred-Marquis x Marquis-Iumillo.

Edgeley Substation, Edgeley (O. A. Thompson) [Oct. 28]

Yield and test weight per bushel of spring-wheat varieties and hybrids grown in the North Dakota uniform nursery, at Edgeley, N. Dak., 1931

Variety or Cross	C.I. No.	Nursery No.	Station No.	Test weight (Lbs.)	Yield (Bu. per acre)
Ceres	6900	--	--	57.5	26.4
Marquis x Kota 1656.106	--	--	N.D.2260	59.0	23.9
Kota x Webster	--	--	H-209	55.5	23.8
Double Cross Minn.2303[1]	--	--	II-21-28	56.0	23.6
Double Cross Minn.2315[1]	--	--	II-21-48	57.0	21.7
Double Cross[1]	--	--	II-21-86	56.5	21.2
Double Cross[1]	--	--	II-21-80	56.5	19.8
Mindum	5296	--	--	58.0	19.6
Hope x Ceres	--	1098	--	56.5	19.5
Hope x 1656.81	--	--	N.D.2325	56.0	19.3
Double Cross[1]	--	--	II-21-83	56.5	19.3
Marquis x Kota 1656.48	--	--	--	56.0	18.9
Hope x Reliance	--	1131	--	55.5	18.4
Mindum x Pentad	8882	--	--	58.5	17.5
Hope x Reliance	--	1110	--	57.0	17.2
Hope x Reliance	--	1129	--	54.0	17.0
Hope x 1656.97	--	--	N.D.2421	55.0	16.9
Hope x Ceres	--	1126	--	56.5	16.8
Hope x Ceres	--	1099	--	55.5	16.7
Hope x Reward	--	--	N.D.2422	55.5	16.3
Hope x 1656.97	--	--	N.D.2326	55.5	16.2
Hope x 1656.81	--	--	N.D.2332	55.5	15.9
Hope x Reliance	--	1140	--	54.0	15.9
Hope x 1656.81	--	--	N.D.2331	55.0	15.4
Marquis	3641	--	--	58.5	14.6

[1] Kanred-Marquis x Marquis-Iumillo.

Hettinger Substation, Hettinger (C. H. Plath) [Oct. 28]

Yield of 25 spring-wheat varieties and hybrid strains grown in the North Dakota Uniform nursery at Hettinger, N. Dak. 1931. (Average of only 2 replications, one having been destroyed.)

Variety or Cross	C.I. No.	Nursery No.	Station No.	Yield (Bu. per acre)
Kota x Webster	--	--	H-209	10.7
Hope x Ceres	--	1099	--	9.3
Double Cross Minn.2315[1]	--	--	II-21-48	9.1
Hope x Ceres	--	1098	--	8.8
Hope x Reliance	--	1140	--	8.8
Do	--	1129	--	8.5
Marquis x Kota 1656.106	--	--	N.D.2260	8.1
Hope x Reliance	--	1131	--	7.8
Hope x 1656.81	--	--	N.D.2325	7.6
Marquis x Kota 1656.48	10014	--	--	7.6
Hope x 1656.81	--	--	N.D.2332	7.5
Hope x Reliance	--	1110	--	7.4
Hope x 1656.97	--	--	N.D.2326	7.3
Hope x 1656.97	--	--	N.D.2421	7.2
Hope x Ceres	--	1126	--	6.9
Hope x 1656.81	--	--	N.D.2331	6.7
Double Cross[1]	--	--	II-21-80	6.1
Do	--	--	II-21-83	6.0
Ceres	6900	--	--	5.9
Hope x Reward	--	--	N.D.2422	5.3
Double Cross[1]	--	--	II-21-86	4.9
Double Cross Minn.2303[1]	10003	--	II-21-28	4.3
Marquis	3641	--	--	3.7
Mindum	5296	--	--	2.6
Mindum x Pentad	8382	--	--	1.6

[1] Kanred-Marquis x Marquis-Iumillo.

Langdon Substation, Langdon (Wheat Improvement, G. S. Smith) (Oct. 31)

The precipitation for October was 2.50 inches, or nearly three times the normal amount. Snow fell for the first time on the 28th but melted as it fell. The maximum temperature was 81° and the minimum 23°.

The uniform winterhardiness nursery has stooled fairly well and the absence of sudden extremes in temperature should favor the proper development in the hardening-off process.

The following tables give some of the results from hard-red-spring-wheat varieties grown this season in the triplicated 3-row nurseries at Langdon. Table 1 shows the percentage of stem rust, test weight per bushel, and yield per acre of 25 spring wheats grown in the North Dakota uniform nursery, while Table 2 gives the percentage of stem rust, test weight, and yield per acre of 27 additional hard-red-spring varieties and hybrids grown in the triplicated 3-row nursery.

Stem rust injury was not so severe at Langdon in 1931 as in 1930, therefore the differences in yield and test weight are not found to be so closely associated with rust infection as they were in 1930. The differences probably are more closely related to the various abilities of the strains and varieties to resist heat and drought damage, since at least once during the season it appeared that continued hot winds were causing damage to wheat. At no time during the year was the moisture very abundant, and yet only two or three times did the drought approach the critical stage.

In the uniform North Dakota nursery, Mindum gave the highest yield, showing that the standard durums yield more than the standard common wheats, a fact generally observed in this section. Many of the new common wheat hybrids, however, yielded nearly as well as Mindum. Hope x Ceres (N. No.1098) was the highest-yielding common wheat, with Kota x Webster (H-209) and several of the Minnesota "double crosses" close behind. It is noteworthy that all the new hybrids in the experiment yielded more than either Ceres or Marquis. Test weights were not high this year because of heavy stooling and lack of subsequent moisture. Mindum gave the highest test weight, while the only common wheats with satisfactory test weights were Hope x Reliance (N. No.1110) and Double Cross II-21-80. Hope is demonstrating its superiority as a parent for producong rust-resistant progeny. This is shown by the fact that 12 selections from crosses of Hope with Ceres, Reliance (1656.81 and 1656.97) showed from a trace to 5 per cent of stem rust infection, whereas the least rust recorded on any of the other hybrids was 10 per cent. The presence of 25 per cent infection on Ceres and 60 per cent on Marquis indicates that a good test of the rust resistance of the hybrids was secured.

In the regular triplicated 3-row common-wheat nursery, Marquis-emmer x Kanred-Marquis (N. No.1087) led all other varieties in yield by a good margin. This variety also carried a fair test weight per bushel, equaled by Reliance x Hope (N. No.1132) but not quite equal to that of Kota x Marquis (1656.44). The yields of these varieties also show little relation to the stem-rust infections, and, as in the uniform, North Dakota nursery, no doubt are more closely related to differences in ability to resist drought and high temperatures.

Table 1. Percentage of stem rust, test weight, and yield per acre of 25 wheat varieties and hybrid strains grown in the North Dakota uniform nursery at Langdon, N. Dak., 1931

Variety	C.I. No.	Nursery No.	Station No.	Stem rust (Per ct.)	Test weight (Lbs.)	Yield (Bu.per acre)
Mindum	5296	--	--	20	61.5	26.0
Hope x Ceres	--	1098	--	2	58.0	25.2
Kota x Webster	--	--	H-209	15	58.5	24.9
Double Cross Minn.2315[1]	10020	--	--	25	58.5	24.5
Double Cross Minn.2303[1]	10003	--	--	10	58.0	24.4
Double Cross[1]	--	--	II-21-80	20	59.5	24.3
Double Cross[1]	--	--	II-21-86	20	58.5	24.3
Mindum x Pentad	8882	--	--	10	60.0	24.2
1656.81 x Hope	--	--	N.D.2325	2	57.5	24.2
Hope x Reward	--	--	N.D.2422	30	58.5	23.5
Hope x Reliance	--	1110	--	1	60.0	22.3
Hope x Ceres	--	1099	--	1	57.5	22.1
Marquis x Kota	--	--	1656.106	10	58.0	22.1
Double Cross[1]	--	--	II-21-83	30	56.5	21.8
Marquis x Kota	--	--	1656.48	10	58.0	21.7
Hope x Reliance	--	1131	--	2	58.5	21.3
Hope x Reliance	--	1140	--	T	58.5	21.2
1656.97 x Hope	--	--	N.D.2326	5	57.5	20.2
1656.97 x Hope	--	--	N.D.2421	2	58.0	19.7
Hope x Ceres	--	1127	--	1	58.0	19.3
Hope x Reliance	--	1129	--	1	57.5	19.3
Hope x 1656.81	--	--	N.D.2332	1	56.5	19.1
Hope x 1656.81	--	--	N.D.2331	3	57.0	18.3
Ceres	6900	--	--	25	56.5	16.8
Marquis	3641	--	--	60	51.0	12.0

[1] Kanred-Marquis x Marquis-Iumillo.

Table 2. Percentage of stem rust, test weight, and yield per acre of 27 additional hard-red-spring varieties and hybrids grown in the triplicate three-row nursery at Langdon, N. Dak., 1931

Variety or Cross	C.I. No.	Nursery No.	Stem rust (Per cent)	Test weight (Lbs.)	Yield (Bu. per acre)
Marquis-emmer x Kota x Webster	--	1087	T	58.5	25.2
Double Cross[1]	--	II-21-74	15	55.5	22.6
Marquis x Kota	8385	1656.85	10	57.0	22.3
Kota x Webster	--	H-123-25	5	57.5	22.2
Hope x Ceres	--	1096	10	57.0	21.9
Marquis x Kota	8004	1656.84	15	55.5	21.5
Ceres[2]	6900	--	27	57.5	21.5
Marquis-emmer x Kanred-Marquis	--	1086	2	53.0	21.0
Hope x Florence	--	14.3.11	35	56.0	20.9
Kota x Marquis	--	1656.44	15	59.5	20.7
Reliance x Hope	--	1139	T	56.5	19.9
Kota-Hd.Fed. x Kanred-Marquis	--	1064	15	55.0	19.9
Reliance x Hope	--	1132	5	58.5	19.3
Do	--	1133	T	58.0	18.6
H-44	8177	--	T	56.0	18.6
Hope	8178	--	T	53.5	18.1
Kota	5878	--	10	55.5	18.0
Marquis-emmer x Kanred-Marquis	--	1079	15	53.5	17.9
Marquillo	6887	--	15	53.5	17.7
Hope x Ceres	--	1104	T	54.0	17.6
Reward	8182	--	45	61.5	17.5
Reliance	7370	--	40	52.0	17.2
1656.81 x Hope	--	2327	T	53.0	16.3
Reliance x Hope	--	1128	5	56.0	16.1
Marquis[3]	3641	--	40	53.5	15.2
Kota x Webster	--	H-151-24	5	57.0	15.1
Garnet	8181	--	55	56.0	14.5

[1] Kanred-Marquis x Marquis-Iumillo

[2] Average of 3 checks

[3] Average of 2 checks

MONTANA

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) (Nov. 1)

The weather in October was very dry and increasing temperatures prevailed most of this period. Growth of winter wheat on fallow has been very good but additional moisture is needed before winter sets in. Maximum temperatures, 76 degrees, minimum, 21 degrees. Precipitation, 0.24 of an inch. The average precipitation for October 1.16 inches.

The following table summarizes the yields obtained in a date-of-seeding experiment with winter wheat at the Judith Basin Branch Station. In this test Karmont (C. I. 6700) has been seeded with the furrow drill at intervals of two weeks from July 16 to November 7.

	Date sown								
	July 16	July 30	Aug.13	Aug.27	Sept.10	Sept.24	Oct. 7	Oct.21	Nov.7
Year	Yield (Bu. per acre)								
1928	0	0	0.9	5.9	26.9	28.9	30.5	25.0	25.4
1929	0	0.3	8.4	23.8	31.1	23.0	15.2	17.8	15.8
1930	3.0	13.5	15.5	29.1	27.6	23.2	23.3	19.3	18.1
1931	1.9	3.8	5.2	6.4	4.9	0	0	8.2	10.9
Av.	1.2	4.4	7.5	16.3	22.6	18.8	17.3	17.6	17.6

Montana Agricultural Experiment Station, Bozeman (Austin Goth) (Oct. 30)

Field work for the season was finished on September 29. Fall weather has been open and all plowing has been completed. The soil is not frozen and some plowing is being done on farms in the Valley. Stand counts were made on the winter-wheat varieties.

WESTERN BASIN AND COAST AREAS (North to West and South)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, O. A. Vogel) (Oct. 24)

The varietal winter-wheat and smut nurseries were sown in dry soil during the period from October 16 to 24. The field plots will be sown next week. The yields of all winter-wheat varieties grown in two or more nurseries in 1931 are shown in the following table. Each variety has been compared with Hybrid 128 grown in the same experiments. In the nurseries all varieties were replicated three times, while in the field plots they were replicated twice on pea ground and twice on summer fallow.

The abnormally low yields from the nurseries at Pullman were due to hot winds during the heading period. The excess nitrates from the sweet clover previously plowed under caused a very luxuriant vegetative growth. Consequently the 3-row blocks, each row of which was 1 foot apart and seeded at the rate of approximately 1 bushel per acre, had considerably less moisture remaining to mature a crop than did the single-row blocks seeded to 150 kernels per rod row 18 inches apart.

Yields of winter-wheat varieties grown at Pullman, Walla Walla, Pomeroy, and St. John, Wash., 1931. [In the nurseries all varieties were replicated three times; in the field plots they were replicated twice on pea ground and twice on summer fallow.]

Variety	C.I. No.	Wash.No.	Location of experiments						Yield in per cent Hybrid 128
			Pullman			Walla Walla	Pomeroy	St. John	
			3-row blocks	1-row blocks	1/40-A plots	3-row blocks	3-row blocks	3-row blocks	
Hybrid 128	4512	592	18.1	29.7	46.2	43.2	50.0	37.8	100.0
Fortyfold No. 54	10064	2676	10.5	36.9	41.9	47.9	51.4	35.2	99.5
Turkey	6175	326	23.0	29.8	39.8	43.2	48.0	38.2	98.7
Triplet	5408	597	16.0	25.8	36.9	48.3	52.2	39.8	97.3
Albit	8275	2517	16.3	29.7	45.9	45.5	48.0	32.8	97.0
Ridit	6703	2324	19.0	28.6	37.4	40.2	42.7	36.2	90.7
Fortyfold	4156	2438	11.1	21.8	35.4	43.0	45.0	36.7	85.8
Kharkof	1442	1858	12.3	22.4	41.1	46.1	46.8	----	90.1
Mosida	6688	2375	18.7	36.2	43.2	47.3	----	42.8	107.5
Coppei	4238	553	13.3	27.1	47.3	45.8	----	----	97.3
Hybrid 123	4511	593	11.7	25.6	46.8	42.7	----	----	92.4
White Odessa	4655	2308	2.6	25.7	40.6	49.0	----	----	85.9
Red Russian	4509	270	10.4	21.8	34.7	----	40.9	----	74.9
Fortyfold No. 43	10063	2675	19.2	41.3	----	45.6	53.7	----	113.3
Oro	8220	2550	11.7	43.8	----	44.1	41.4	----	100.0
Fortyfold No. 29	10062	2674	16.3	34.3	----	39.1	45.8	----	96.1
Jenkin	5177	526	19.3	25.6	----	43.0	46.2	----	95.0
White Winter	5219	2189	3.5	30.9	----	46.4	40.9	----	86.3
Federation	4734	1247	16.0	23.4	----	48.2	----	39.8	98.9
Turkey	7366	2546	13.1	26.9	----	48.4	----	34.8	95.7
Ridit x Pacific Bluestem	----	2324/265	17.6	28.8	----	42.8	----	34.1	95.7
Ridit x White Odessa 87-1	----	2324/1799	4.8	35.4	----	41.4	----	30.6	87.1
Ridit x Pacific Bluestem	----	2324/265	17.2	20.7	----	42.2	----	31.7	86.8
Jenkin x Ridit	10081	2807	7.1	24.9	----	44.5	----	33.3	85.2
Ridit x White Odessa 87-2	----	2324/1799	3.9	30.6	----	41.4	----	33.8	85.2

Variety	C.I. No.	Wash. No.	Location of experiments						Yield in per cent Hybrid 128
			Pullman			Walla Walla	Pomeroy	St. John	
			3-row blocks	1-row blocks	1/40-A plots	3-row blocks	3-row blocks	3-row blocks	
Fortyfold x Federation	8247	2823	19.3	----	----	48.5	52.9	----	108.4
White Odessa x Hard Federation	10065	2825	20.8	----	----	46.9	48.0	----	104.0
Hussar x Hoenheimer, Oreg.No.3025	10068	2822	15.7	----	----	48.5	44.8	----	97.9
Hybrid 128 x Fortyfold	10066	2824	17.0	----	----	42.5	49.5	----	97.9
Sherman	4430	2432	20.0	----	----	46.8	41.2	----	97.0
Argentine	10061	2764	16.1	----	----	47.4	43.2	----	95.9
Hussar x Hoenheimer, Oreg.No.3024	10067	2781	10.1	----	----	49.8	42.3	----	91.8
Jones' Fife	4468	371	13.7	22.9	39.6	----	----	----	81.1
Selection C	----	2425	14.1	25.6	----	----	45.3	----	86.9
Hybrid 128 x Martin	----	592/1092	10.8	39.0	----	54.5	----	----	114.6
Hussar x (Turkey x Hybrid 128)	----	2583	15.7	34.9	----	47.5	----	----	107.8
Hussar x Selection C	----	2312/2425	12.7	35.7	----	45.9	----	----	103.6
Turkey x Florence	10080	2471	14.3	26.8	----	44.3	----	----	93.8
Turkey x Hybrid 128 x Selection C	----	2426/2425	8.8	28.3	----	47.0	----	----	92.4
Ridit x White Odessa 91	----	2324/1799	9.1	29.0	----	36.9	----	----	82.4
Turkey x Rosen	----	326/1940	15.6	35.3	----	----	----	----	106.5
Hussar x Aegilops	----	2312/A	18.0	29.8	----	----	----	----	100.0
Turkey x White Odessa	----	326/2308	15.0	30.6	----	----	----	----	95.4
Hussar	4843	2312	13.7	30.0	----	----	----	----	91.4
Turkey x Florence	----	2472	14.0	31.2	----	----	----	----	94.6
Minhardi	5149	2654	16.0	27.1	----	----	----	----	90.2
Fortyfold	4156	2819	16.3	23.2	----	----	----	----	82.6
Jenkin x Martin	----	526/1092	11.7	27.3	----	----	----	----	81.6
Furst Hatzfeld	----	2580	8.9	30.0	----	----	----	----	81.4
Hussar x Aegilops	----	2312/A	10.5	27.9	----	----	----	----	80.3
Hussar x (Turkey x Hybrid 128)	----	2312/2427	8.7	29.1	----	----	----	----	79.1
White Odessa x Turkey	----	2308/326	14.3	30.4	----	----	----	----	79.0
Buffum No. 17	3330	2544	8.9	25.2	----	----	----	----	71.3

Variety	C.I. No.	Wash. No.	Location of experiments						Yield in per cent Hybrid 128
			Pullman			Walla Walla	Pomeroy	St. John	
			3-row blocks	1-row blocks	1/40-A plots	3-row blocks	3-row blocks	3-row blocks	
Heilz Dickkopf	----	2578	10.7	21.2	----	----	----	----	66.7
Hoenheimer Behaart	----	2579	8.2	23.3	----	----	----	----	65.9
Hoenheimer Unbehaart	----	2577	4.6	25.9	----	----	----	----	63.8
Hybrid 143	4513	590	----	20.6	46.9	----	----	----	88.9
Kanred	5146	1213	----	27.8	39.1	----	----	----	88.1
Little Club	4066	500	----	20.7	42.8	----	----	----	83.7
Martin	4463A	1092	----	15.9	37.2	----	----	----	70.0
Requa	----	2821	----	40.3	----	----	59.7	----	125.5

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens)

For the past week there has been a little rain but much more is needed to make moisture conditions favorable. Seeding is now being done and probably will be completed in a few days. There is prospect of another light crop next year unless conditions in the winter and growing season are unusually favorable.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (Nov. 2)

Very mild, pleasant weather prevailed in October. Most of the farm crops are harvested, such as sugar beets and potatoes.

The prolonged drought was broken by steady rains during the last week, totaling 1.38 inches.

Maximum and minimum temperatures for October were 74° and 24°, respectively.

The late planting of sorghum, comprising feterita, Sooner milo, and Dwarf hegari, planted on June 13, was not materially injured by frost until October 26. Feterita and Sooner milo matured nearly 100 per cent from this late planting but ordinarily killing frosts occur three weeks earlier than they did this season.

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CEREAL COURIER

Official Messenger of the Division of Cereal Crops and Diseases
Bureau of Plant Industry, U. S. Department of Agriculture
(NOT FOR PUBLICATION)

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Vol. 23 December 10, 1931 No. 28
Personnel (Nov. 16-Dec.10) and Field Station (Nov. 1-30) Issue

PERSONNEL ITEMS

Dr. J. R. Holbert, Bloomington, Ill., attended the meetings of the American Society of Agronomy in Chicago on November 19 and 20. Dr. Holbert participated with Dr. W. L. Burlison, University of Illinois, in the symposium entitled "Cold and Drought Resistance in Plants."

Mr. M. A. McCall left Washington on November 30 for Ithaca, N. Y., where he spent three days at the Cornell University Agricultural Experiment Station in the interests of cooperative cereal experiments.

Mr. F. D. Richey visited the Cornell University Agricultural Experiment Station, Ithaca, N. Y., from November 30 to December 2 in the interests of cooperative corn experiments.

Mr. S. C. Salmon returned to Washington on November 26 from a 10-day trip to points in Indiana, Illinois, and Wisconsin in the interests of cooperative wheat investigations. Mr. Salmon also attended the meetings of the American Society of Agronomy in Chicago on November 19 and 20.

VISITORS

Prof. Paul C. Hsu, College of Agriculture, University of Nanking, Nanking, China, was a Division visitor on December 9.

Mr. Otto Praeger, Postal Advisor, Department of Commerce and Communications, Bangkok, Siam, was a Division visitor on December 11.

Dr. E. C. Stakman, University Farm, St. Paul, Minn., was a Division visitor the week of December 7.

Mr. H. J. C. Umberger, Dean and Director of the Division of Extension, Kansas State Agricultural College, Manhattan, Kans., was a Division visitor on December 10.

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MANUSCRIPTS AND PUBLICATIONS

59 A manuscript entitled "Catalase Activity and Respiration in the Leaves of Growing Barley," by Merritt N. Pope, was submitted on November 17 for publication in the Journal of Agricultural Research.

60 A manuscript entitled "The Nature and Extent of Hetero-fertilization in Maize," by George F. Sprague, was approved on November 17 for submittal to Genetics.

61 A manuscript entitled "Registration of Varieties and Strains of Oats, V," by T. R. Stanton, was approved on November 20 for submittal to the Journal of the American Society of Agronomy.

The following 10 abstracts of papers were approved on November 24 for submittal to Phytopathology:

62 New Parasites on Cereal Rusts, by M. N. Levine, A. A. Granovsky, and J. G. Leach.

63 Preliminary Report on the Relation of Maturity of Seed to Seedling Blight Susceptibility in Dent Corn, by P. E. Hoppe, J. R. Holbert, and J. G. Dickson.

64 Diplodia Stalk- and Ear-rot Studies of Dent Corn, by A. L. Smith and J. R. Holbert.

65 Helminthosporium sigmoideum the Conidial Stage of Sclerotium oryzae, by E. C. Tullis.

66 Ophiobolus oryzinus the Cause of a Disease of Rice in Arkansas, by E. C. Tullis.

67 Physiologic Forms of Puccinia graminis Produced on Barberries in Nature, by E. C. Stakman, Lee Hines, Ralph U. Cotter, and M. N. Levine.

68 The Dissemination of Cereal Rust Spores in the Greenhouse by Terrestrial Invertebrates, by A. A. Granovsky and M. N. Levine.

69 Appressorium Formation and Penetration by Leaf Rust of Wheat, Puccinia triticina Eriks., in Relation to Stomatal Aperture, by R. M. Caldwell and G. M. Stone.

70 The Effect of Leaf Rust, Puccinia triticina Eriks., on the Composition and Yield of Winter Wheats in 1931, by R. M. Caldwell, H. R. Kraybill, J. T. Sullivan, and L. E. Compton.

71 Studies on the Pathogenicity of Bacterium translucens var. undulosum, by R. H. Bamberg.

72 A manuscript entitled "Corn Hybrid and Variety Experiments," by G. H. Stringfield, was approved on November 23 for publication in The Annual Report of the Director of the Ohio Agricultural Experiment Station.

73 A manuscript entitled "Physiologic Specialization as a Factor in the Epidemiology of Puccinia graminis tritici," by James M. Wallace, was approved on November 27 for submittal to Phytopathology.

74 A manuscript entitled "Registration of Improved Wheat Varieties, VI," by J. Allen Clark, was approved on December 5 for submittal to The Journal of the American Society of Agronomy.

The article entitled "Inheritance in a 'Constant' Hybrid between Aegilops ovata and Triticum dicoccum," by J. W. Taylor and C. E. Leighty, appears in the Journal of Agricultural Research 43(8): 661-679, figs. 1-6. October 15, 1931.

The article entitled "A Review of Recent American Literature on Mineral-Deficiency Diseases of Economic Plants," by Harry B. Humphrey, appears in the Proceedings of the Second International Congress of Comparative Pathology (Deuxième Congres international de Pathologie comparée). (The paper was presented by title before the Congress held in Paris, October, 1931.)

THE DIVISION OF CEREAL CROPS AND DISEASES AS A TRAINING SCHOOL

The Division of Cereal Crops and Diseases, although fundamentally a research organization, has furnished valuable experience and training to numerous agronomists and patholigists. During the 30 years of its existence many men have left the Division to assume positions elsewhere. Some of the best known former employees are listed below. This list of names is impressive and includes several important leaders in the field of agriculture. A majority of the 22 men began their scientific careers in the Division of Cereal Crops and Diseases, having entered the service shortly after graduation from college or upon the completion of graduate studies.

Former Full-time Employees of the Division of Cereal Crops and Diseases

W. M. Jardine - Minister to Egypt, formerly Secretary of Agriculture and formerly President of Kansas State Agricultural College.

F. D. Farrell - President, Kansas State Agricultural College.

C. W. Warburton - Director of Extension Work, U. S. Department of Agriculture.

E. C. Johnson - Dean of Agriculture and Director, Experiment Station, State College of Washington.

P. V. Cardon - Director, Experiment Station, Utah Agricultural College.

E. M. Freeman - Dean of College of Agriculture, Forestry and Home Economics, University of Minnesota.

A. H. Leidigh - Dean of Agriculture, Texas Technological College, Lubbock, Texas.

H. J. C. Umberger, Dean and Director, Division of Extension, Kansas State Agricultural College.

C. W. Hungerford, Dean of Graduate School, Vice-Director, Experiment Station and Professor of Plant Pathology, University of Idaho.

Clyde McKee, Professor of Agronomy and Vice-Dean of Agriculture, Montana State College.

C. E. Leighty, Principal Agronomist in Charge, Division of Dry-Land Agriculture, Bureau of Plant Industry, U. S. Department of Agriculture.

L. A. Fitz - Principal Grain Exchange Supervisor, Grain Futures Administration, Chicago, Ill.

E. L. Adams - President Rice Growers Association of California which markets most of the California rice crop. Mr. Adams is one of the largest rice growers in California.

C. R. Ball, Research Associate, Bureau of Public Administration, University of California.

W. H. Tisdale - In charge of research on Fungicides and Insecticides, Jackson Laboratory, E. I. Du Pont de Nemours and Co., Wilmington, Del.

G. H. Godfrey, Nematologist, Experiment Station of the Association of Hawaiian Pineapple Canners, Honolulu, Hawaii.

Manley Champlin - Professor of Field Husbandry, University of Saskatchewan.

H. H. Laude - Professor of Farm Crops, Kansas State Agricultural College.

L. C. Aicher - Superintendent Fort Hays (Kans.) Experiment Station. The Fort Hays Experiment Station has the largest cropped area of any field station in the United States.

W. H. Weston, Jr. - Professor and Chairman, Department of Botany, and Director of the Biological Institute, Harvard University.

O. S. Aamodt - Professor of Genetics and Plant Breeding, University of Alberta.

Stephen Anthony - Physician, Chicago, Ill.

The above list of successful former employees is far from complete. Numerous others, most of whom are relatively young men, are now engaged in research, teaching, agricultural extension, business, or farming. A list of all former employees of the Division of Cereal Crops and Diseases, including temporary and part-time employees, would be comparable to a selected list of graduates from a standard college or university. Included among these are men now in Canada, Australia, Hawaii, and Haiti, as well as all parts of the United States.

Employment in the Cereal Division, however, has not been largely of a temporary nature. This is shown by the long service of many of the employees now in the organization. Of the present technical staff not less than 40 have served 10 years or more on a full-time basis. Fifteen of these have served the Division 15 years or more, and six of them, 20 years or more. In addition, 12 employees have served a total of 10 years or more, either on a part-time basis or a part-time and full-time basis combined.

Experience in the Division of Cereal Crops and Diseases has served to train men who have remained in the service as well as those who have gone elsewhere. Leadership in the Division is now largely vested in men who have advanced within the ranks. Six of the eight leaders of agronomic projects began their careers in agronomy 17 to 24 years ago as field employees in positions equivalent to the present grade of junior agronomist. The present Division chief, as well as his predecessor, was chosen from the ranks of the Division.

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IMPORTANT

It is again requested that typewritten reports from the field submitted for the Cereal Courier be in double space.

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UNITED STATES DEPARTMENT OF AGRICULTURE

Director of Personnel and Business Administration

Dec. 1, 1931

P.B.A. Circular No. 189

Unstamped Official Mail to Foreign Addresses

A recent communication to the Department from the Second Assistant Postmaster General quotes from a letter received in the Post Office Department from the Postal Administration of Germany mentioning the receipt in Germany by a German citizen of an official communication from one of the field offices of this Department to which the postage required for foreign transmittal had not been affixed, with the consequence that the citizen was compelled to pay the postal charges. This was stated to be only one of several instances of the sort occurring from time to time over a course of years. The official envelope of the Department occasioning the complaint was enclosed and bore evidence of the facts stated.

In failing to affix the required postage the field station officials overlooked par. 80 of the Fiscal Regulations of the Department, which clearly indicates that postage is required on letters to points in foreign countries with certain specified exceptions. These exceptions, it may be mentioned, vary somewhat from year to year, but are shown in the current edition of the annual United States Postal Guide under the heading of "Free Matter."

In view of the facts disclosed, chiefs of bureaus are requested to bring to the attention of all of their employees the instructions with respect to postage on foreign mail matter contained in par. 80 of the Fiscal Regulations and to impress upon them the importance of compliance therewith.

(Signed) W. W. Stockberger

Director.

Paragraph 80 of the Fiscal Regulations reads as follows:

"Payment of Foreign Postage.-Postage is required and will be allowed at usual postal rates on official mail to foreign countries. Official correspondence which is admissible to the domestic mails under penalty envelope or label may also be dispatched in the same manner to the Territorial and island possessions of the United States, Canada, Cuba, Mexico, the Republic of Panama, and the United States Naval Hospital, Yokohama, Japan. (Amended; effective October 31, 1923.)

FIELD STATION CONDITION AND PROGRESS

(All experiments except those conducted at the Arlington Experiment Farm, Rosslyn, Va., are in cooperation with State agricultural experiment stations or other agencies.)

HUMID ATLANTIC COAST AREA (South to North)

GEORGIA

Coastal Plain Experiment Station, Tifton (Corn Breeding, H. S. Garrison) (Nov. 19)

Oats in the fall-sown nursery are not doing well because of the extremely dry weather. The stand is poor and very uneven. Some varieties, Victoria, for example, have not germinated at all. This has been the driest season in this locality for 53 years.

VIRGINIA

Arlington Experiment Farm, Rosslyn (Small Grain Agronomy, J. W. Taylor) (Dec. 2)

The condition of fall-sown grains is below average. Subnormal precipitation for September, October, and November caused poor germination and slow fall growth. Stands of wheat are especially ragged, as the rainfall for October was but slightly more than one inch and approximately half of that in November. Aphids have been unusually destructive, especially to late-sown or thin stands of small grains. Some spaced seedings have been practically wiped out. The record-breaking warm November no doubt increased the activities of the aphids.

HUMID MISSISSIPPI VALLEY AREA (South to North)

LOUISIANA

Rice Experiment Station, Crowley (Rice Agronomy, J. M. Jenkins) (Dec. 1)

The weather in November was much warmer than usual. There was only a very light frost and no ice. A temperature of 80 or above was recorded on 13 days.

Farmers were not able to do much plowing until rain had softened the soil. This was not until the middle of the month; in the latter part of the month frequent rains prevented most field operations.

The soybean harvest was completed on the Station and all soybean fields were disked. Old levees, on the land recently purchased, were plowed, and temporary levees on the old portion of the farm were leveled.

Threshing of nursery rices was begun and plots of winter grass and clovers were sown. The old pasture lot was disked and seeded to white Dutch clover and rye grass.

Among the visitors at the Station were: Russell C. Baker, assistant engineer, U. S. Engineer Office, Vicksburg, Miss., J. L. Fletcher, professor of agriculture, Southwestern Louisiana Institute, and his class in agriculture, and R. H. Lush, research professor of dairying, Louisiana State University, Baton Rouge, La.

ILLINOIS

Funk Bros. Seed Co., Bloomington (Corn Root, Stalk and Ear Rots, J. R. Holbert) (Nov. 30)

The weather in central Illinois in September and October and the early part of November has been unusual in that no near-freezing or freezing temperatures occurred prior to the general maturing of the corn crop. Maturity, and, in many instances, prematurity, was hastened by drought, by unseasonably warm temperatures in September, and by deficient subsoil moisture. The market quality of this year's corn crop at Bloomington probably will be above the average, although many inconspicuously rotted ears were found, mostly due to Diplodia. In experimental plots in which a number of cross-bred strains were grown, the percentages of ears lightly infected with Diplodia ranged from less than 1 per cent to approximately 50 per cent, and the percentages of ears badly rotted by Diplodia ranged from less than 1 per cent to about 15 per cent. Open-pollinated strains also differed in the percentage of rotted ears but the differences were not so great.

Heavy infections of bacterial blight and wilt were found in dent corn at several widely separated points in central Illinois, in some instances causing measurable injury. The reactions of inbred lines of dent corn to these bacterial infections varied from almost complete susceptibility to apparent immunity.

On November 12 the equipment for free- and bound-water determinations, situated in the portable field laboratory near Bloomington, was moved to the east section of the agronomy greenhouse at Urbana, where the physiological studies being conducted by the Division of Cereal Crops and Diseases and the University of Illinois will be continued during the winter months. The equipment for determining bound water in the various tissues of the corn plant has been constructed according to suggestions by Dr. William Robinson, now of the Bureau of Entomology. Department of Agriculture, formerly of the Sprague Memorial Institute and the department of pathology of the University of Chicago. The University-owned field refrigeration chamber also has been moved into the same section of the greenhouse for use during the coming winter. It is planned to start the greenhouse work as soon as the field work is completed.

A week or ten days longer will be required to complete the field work for the season. However, germination of the hand-pollinated ears will be started about the middle of December instead of January or February, in an attempt to be ready to begin active field operations about a month earlier in the spring,--April 1 instead of May 1.

With the increased number of mechanical corn harvesters in successful operation, much attention is being directed not only to wind resistance and stiffness of stalk following maturity, but also to placement of ear on the stalk, the lower-eared strains being more generally preferred.

IOWA

Agricultural Experiment Station, Ames (Crown Rust of Oats, H. C. Murphy) (Dec. 1.)

The weather this fall up to November 27 was very mild. It was rainy and cloudy in November. Volunteer oats matured in abundance. Specimens of the uredinial stage of crown rust of oats, leaf rust of wheat, and leaf rust of barley were collected November 25. Crown rust of oats and leaf rust of wheat were very abundant. A trace of stem rust of oats also was observed on that date.

Identification of approximately seventy-five cultures of crown rust collected in 1931 indicate that physiologic form 1 again was the most prevalent. Only two varieties of oats, Victoria, C. I. No. 2401, and Glabrota, C. I. No. 2630, have been found resistant to this common form.

Dr. M. N. Levine, University Farm, St. Paul, Minn., visited the Station November 16 to 18, and Mr. C. O. Johnston, Kansas State Agricultural College, Manhattan, Kans., November 16 and 17. Dr. Levine, Mr. Johnston, and the writer conferred regarding cereal-rust research and cooperative manuscripts.

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab, J. G. Dickson) (Nov. 19)

The cereal pathology staff at the University of Wisconsin has moved into the new quarters in the agronomy building. This building is an addition to the horticultural building in the development of the plant institute unit on the College of Agriculture campus. Three large offices and two laboratories are used for cooperative research in cereal pathology and in addition a large media and preparations room, and a microchemical laboratory adjacent to the offices and laboratories, are available. There is also a large seed-preparation and counting laboratory and seed-storage room in the basement.

Two new greenhouse units have been assigned to cereal pathology, a total of about 2,000 square feet of greenhouse space now being used in the cooperative cereal-disease investigations.

Assistant Secretary R. W. Dunlap visited the Station on November 14. He discussed both corn diseases and cereal-scab problems and also looked over greenhouse experiments. Secretary Dunlap was in Madison in connection with the National Grange meeting held during the week of November 12.

(December 1)

Mr. S. C. Salmon and Dr. R. M. Caldwell visited the Station on November 21 to discuss cooperative rust- and scab-breeding projects.

Dr. L. M. Massey, head of the department of plant pathology of the Agricultural Experiment Station, Cornell University, was a visitor on November 21.

Mr. F. J. Greaney of the Rust Laboratory, Winnipeg, visited the laboratory on November 30.

GREAT PLAINS AREA (South to North)

TEXAS

Substation No. 6, Denton (Wheat Improvement, I. M. Atkins) (Nov. 15)

During the first half of November the weather was clear and temperatures were above normal. A minimum temperature of 35° was accompanied by a very light frost. The first killing frost of the season has not yet occurred, although the normal date is November 11.

The clear weather has enabled farmers to do a great deal of fall work which they were unable to do before the October rains. Seedbeds were prepared and a large quantity of wheat and oats were sown. There has been an unusually large number of calls for barley seed. The surface soil has dried out to such an extent that the oats and barley in the nursery have only partially emerged. Seed is in good condition, however, and no doubt will emerge after the first shower. The winterhardiness-oat nursery was irrigated to bring all plants up at the same time.

The wheat nursery is making favorable growth and if warm weather continues will be in good condition to go into the winter in spite of the late sowing. Reseeded varieties in the wheat-varietal test have emerged and are rapidly overtaking the earlier sown varieties. Barley and oat varietal tests in field plots are in fine condition.

(Nov. 30.)

Drying winds caused loss of moisture from the top soil so that late-sown small grain had failed to emerge until after a shower of 0.54 of an inch on November 17. This was followed by a series of showers which brought the total precipitation for the month to slightly below normal.

All small grains were benefited by the rain. Small grains which emerged following the rains in October were not suffering, but the nursery oats and barley emerged only to about twenty-five per cent of a stand. Grain which emerged after the rains is rather late, but if favorable weather continues for a short time it will make sufficient growth to go into the winter in good condition.

United States Field Station, Dalhart, (B. F. Barnes) (Nov. 19)

Yield in bushels per acre of grain-sorghum varieties grown in date-varietal experiment, 1931

YIELD

Variety	C.I. No.	Dates Planted May 15	June 1	June 15	Average of 3 planting dates	Planted on fallow June 2	Grand average of 4 plantings
Dwarf Yellow milo	332	33.5	46.0	45.8	41.8	52.7	44.5
Wheatland milo	918	31.9	41.8	41.3	38.3	46.0	40.3
Fargo milo	809	26.6	40.2	37.9	34.9	54.5	39.8
Double Dwarf milo	868	29.0	42.0	41.3	37.4	44.6	39.2
Sunrise kafir	472	24.8	37.5	41.3	34.5	48.2	38.0
Club kafir	901	22.8	30.8	36.6	30.1	57.6	37.0
Reed kafir	628	24.8	36.4	37.1	32.8	49.1	36.9
Beaver milo	871	25.9	39.3	40.4	35.2	40.6	36.6
Dwarf kafir	-	23.7	35.3	32.1	30.4	51.8	35.7
Spur feterita	623	21.0	30.1	40.6	30.6	46.0	34.4
Chiltex	874	23.4	27.9	27.5	26.3	47.8	31.7
Dwarf feterita	810	18.3	26.1	36.6	27.0	45.1	31.5
Early Red kafir	866	22.3	28.8	28.1	26.4	45.5	31.2
Premo	873	22.8	24.6	24.8	24.1	46.9	29.8
Texas Blackhull kafir	865	19.0	25.9	29.4	24.8	44.2	29.6
Standard feterita	182	13.0	26.1	36.8	25.3	38.8	28.7
Dwarf hegari	620	17.0	25.4	23.0	21.8	44.2	27.4
Ajax	968	20.5	18.8	21.2	20.2	48.2	27.2
Pink kafir	432	19.0	23.9	24.8	22.6	40.2	27.0
Grohoma	920	12.7	21.9	17.6	17.4	42.9	23.8

OKLAHOMA

Southern Great Plains Field Station, Woodward (Grain Sorghum and Broomcorn, J. B. Sieglinger) (Nov. 16)

The weather for the first half of November was damp and warm for this time of year. Selecting of seed heads was completed, and the baskets of heads were hauled into the threshing barn for threshing. However, damp weather has prevented threshing.

The maximum temperature for the first half of November was 83° on the 3rd; the minimum 34° on the 2nd. The precipitation was 4.32 inches.

Southern Great Plains Field Station, Woodward (Wheat Improvement, Edmund Stephens) (Nov. 16)

On November 13, 4.27 inches of rain fell during the day and night. This moisture, of course, is of considerable benefit to winter wheat. The downpour caused some damage from washing and covering winter-wheat plants, but permanent injury probably will not be great. In general, winter wheat made very satisfactory growth during the month.

KANSAS

Agricultural Experiment Station, Manhattan (Wheat Leaf Rust, C. O. Johnston) (Dec. 1)

Winter wheat was benefited by very mild fall weather. There was a shortage of moisture until the middle of November but since then heavy rains have fallen. Wheat in the vicinity of Manhattan is in excellent condition, but that in central and southwestern Kansas is reported to be in very poor condition because of lack of moisture.

Leaf-rust infection was very heavy on nursery and field-plot sowings at Manhattan by November 6 and has increased slightly since then. Recent freezes have reduced materially the percentage of inoculum and retarded rust development. Stem rust was present in moderate amounts on volunteer wheat and barley but had almost disappeared by November 10. Spore traps have been exposed daily since November 5 to obtain some knowledge of the fall movement of rust spores.

Septoria leaf-blotch infection is very severe on wheat growing in field plots at the agronomy farm. Nursery sowings made a short time later show only very light infection.

Kawvale wheat, which is highly resistant to leaf rust in the Southern Great Plains, is being distributed to farmers for the first time. It has yielded very well for several years in southeastern Kansas, in comparison with several adapted soft-red-winter varieties.

Fort Hays Branch Experiment Station, Hays (Cereal Agronomy, A. F. Swanson and L. C. Aicher) (Nov. 17)

Yields, combine harvesting losses, and lodging of grain sorghums grown in experimental fields, 1931[1]

Variety	C.I. No.	Yield (bu. per acre) Headed [2]	Yield (bu. per acre) Harvested	Yield (bu. per acre) Combined[3] Losses Gleaned	Yield (bu. per acre) Total	Percentage lodged (Oct. 31)
Yellow kafir	902	37.6	16.8	21.2	38.0	5
Wheatland milo	918	17.5	15.2	2.1	17.3	3
Custer milo	919	22.1	17.3	3.0	20.3	7
Beaver milo	871	21.7	20.6	1.7	22.3	1
Milo x kafir (Manhattan Row No. 27-317)	963	21.0	19.9	7.2	27.1	6
Milo x kafir x milo (332-6)	961	27.9	18.5	2.5	23.0	0
White Custer (H. C. 305)	-	21.5	16.3	2.5	18.8	1
Wheatland x Dwarf Yellow milo (918x332-1-2)	-	23.6	20.0	4.6	24.6	1
Milo x Pink kafir x Milo (H. C. 311)	-	16.1	12.5	4.7	17.2	8
Dwarf feterita x milo x kafir (H.C.312)	-	31.7	11.8	22.7	34.5	43
Ajax (F.C.6620)	968	17.7	11.8	5.8	17.6	19
Pink kafir x milo (H. C. 313)	-	13.4	10.8	3.0	13.3	5
Dwarf feterita x Dwarf Freed (H.C.301)	-	15.6	13.2	1.7	14.9	4

[1] Each variety was grown in a 1.6th-acre or 3.8th-acre strip approximately half a mile in length. Half of each strip was cut with the swather and the remainder was combined.

[2] Cut with a dump-box swather September 25; threshed October 24 when grain contained about 14 per cent moisture.

[3] Harvested November 3 and 4 when grain contained about 10 to 12 per cent moisture. First killing frost occurred October 27..

NEBRASKA

Agricultural Experiment Station, Lincoln (Wheat Improvement, C. A. Suneson (Nov. 16)

Unusually warm weather still prevails. The first frost occurred on October 31, making a frost-free period of 191 days this year. Soil moisture is adequate.

The unusually prolonged warm weather of this fall has accentuated differences in growth in wheat varieties. The Blackhull strains are unusually prolific, while Kanred and Turkey have made no more than normal growth. Controlled freezing studies indicate that the hardening of field plants is materially below normal, which suggests that a hard freeze now probably would severely injure wheat.

Hessian flies are again rather numerous in early seeded wheat, as shown in the following table.

Mr. N. E. Jodon is spending the winter at the Station.

Hessian-fly infestation in winter-wheat varieties seeded at Lincoln, Nebr., September 22, 1931

Variety	C.I. No.	Plants infested (per cent)	Culms infested (per cent)	Av. No. flax seeds per plant
Early Blackhull	8856	24	9.9	0.96
Kanred x Prelude	8886	60	28.5	3.84
Turkey Sel.	10016	80	37.5	3.84
Kanred	5146	68	29.2	2.88
Oro	8220	80	33.3	3.28
Cheyenne	8885	96	49.2	6.64
Nebraska No. 60	6250	76	35.7	4.40
Kharkof	1442	92	42.5	3.32
Kharkof (Hays No.2)	6686	84	32.5	3.68
Blackhull	6251	28	8.7	1.16
Tenmarq	6936	72	26.0	3.52
Kawvale	8180	4	.7	.12
Minturki	6155	48	15.1	1.04
Minhardi x Minturki	8034	84	39.1	3.84
Kanred x Hard Federation	11373	54	17.5	2.40

SOUTH DAKOTA

Belle Fourche Field Station, Newell (Beyer Aune) [Dec. 1]

Test weight and yield per acre of spring-wheat varieties grown in triplicate plots under irrigation at the Belle Fourche Field Station, Newell, S.Dak., 1931

Class and variety	C.I.No.	Test Weight (Lbs.)	Yield (bu. per acre)
Hard Red Spring:			
Reliance	7370	61	17.8
Ceres	6900	60	17.2
Champlain	2782	57	16.9
Marquis	3641	60	14.4
Reward	8152	61	12.8
Hope	8178	54	12.2
Supreme	8026	59	12.2
Marquillo	6887	56	9.7
Durum:			
Nodak	6519	59	17.0
Mindum	5296	60	14.7
Kubanka	1440	57	11.7
White:			
Federation	4734	56	9.7

United States Field Station, Redfield (Wheat Improvement, E. S. McFadden) (Nov. 30)

The weather was generally mild and pleasant until after the middle of November, but rain and sleet on the 20th turned to a blizzard on the 21st, and thus winter was introduced. A less severe storm on the 24th again blocked highways which had been cleared after the first snow fall of eight inches. Fair and cold weather has prevailed since.

The total precipitation for November amounted to 1.07 inches, nearly all of which was recorded the last half of the month in the form of snow. The maximum temperature was 66°; the minimum -6° on the 25th.

NORTH DAKOTA

Hettinger Substation, Hettinger (C. H. Plath) [Dec. 1]

Yields and test weight per bushel of spring-wheat varieties grown in triplicate plots at the Hettinger Substation, Hettinger, N. Dak., 1931

Class and variety	C.I.No.	Test Weight (Lbs.	Yield (bu. per acre)
Hard Red Spring:			
Marquillo	6887	57.0	7.3
Montana King	8878	56.5	7.1
Komar	8004	57.5	7.1
Marquis x Kota 1656.48	10014	56.0	7.1
Marquis 10B	--	58.5	6.8
Marquis, Sask. No.7	--	59.0	6.7
Double Cross, Minn.2303	10003	58.0	6.6
Marvel	8876	57.0	6.5
Reliance	7370	58.5	6.2
Ceres	6900	58.0	5.9
Hope	8178	55.0	5.8
Supreme	8026	58.0	5.4
Reward	8182	58.0	5.2
Marquis	3641	58.0	5.2
Marquis	--	58.0	5.1
Double Cross, Minn.2305	10005	58.0	3.7
Durum:			
N.D.R. 216	--	58.0	5.6
Nodak	6519	59.0	4.0
Kubanka	1440	60.0	3.1
Pentad	3322	58.5	2.7
Mindum	5296	59.0	2.3

Northern Great Plains Field Station, Mandan (Cereal Agronomy, V. C. Hubbard)(Nov. 16)

The very mild weather and infrequent freezing of the first half of November have been favorable to winter wheat. Frosts thus far have not been severe enough to cause injury. Volunteer spring wheat that has emerged since harvest is still green and seems to have been uninjured by the low temperature of 20° on November 4. Soil temperatures at a depth of four inches in the winter-wheat nursery have averaged about 45°.

December 2.

Winter weather prevailed for the last half of November in abrupt contrast to the mild weather up to the middle of the month.

The flax hybrids sown in the greenhouse November 12 emerged with excellent stands about a week after seeding. The plants have made good growth and are now about 2 inches high.

The control of Russian thistles in flax plots by delayed seeding and tillage before seeding was very striking this past season, as shown by counts and weights of weeds from sample square-yard areas. Thistles were very abundant in plots sown early (April 20 and 30) where spring frosts nearly destroyed the flax crop. Thistles also were plentiful in plots sown May 9, but were effectively controlled in later seedings by tillage. Average numbers and weights of thistles per acre from 3 square-yard areas in each of 3 plots are as follows:

Date of seeding	Russian thistles per acre Number of plants	Pounds
April 20	161,000	8,690
April 30	69,000	5,312
May 9	49,000	3,226
May 20	9,000	232
May 29	5,000	361
June 10	2,000	241

The after-ripening-loss experiment showed a significant decrease in yield between successive dates of harvest except the last. Seven flax varieties were seeded May 27 in triplicated five-row plots. The first row of each plot was harvested September 22, when all rows were ripe enough to harvest. Average yields from all 7 varieties harvested on 5 successive dates were as follows:

Date of harvest 1931	Yield (Bu. per acre)
September 22	18.2
October 3	16.9
October 15	15.5
October 31	12.0
November 14	12.4

Dickinson Substation, Dickinson (Cereal Agronomy, R. W. Smith) (Nov. 17)

Mild weather with almost no precipitation prevailed in November up to the 15th. The ground frequently froze slightly at night but thawed out each morning. Cooler weathr set in on the 15th and the ground has been frozen most of the time for the past two days.

Winter wheat and rye on the Substation are in good condition and have continued to grow until the past few days. There has been but little rain and only a trace of snow since October 22, but there is more moisture in the soil than there was at this time last year.

November 21.

Average acre yields of oats, barley, and emmer grown in replicated plots at the Dickinson Substation, Dickinson, N. Dak., 1931

Variety	C.I.No.	Yield (Bu. per acre)
	Oats (Quadruplicated 56th-acre plots)	
Markton	2053	14.6
Green Russian selection	2323	13.8
Rainbow	2345	13.5
Gopher	2027	13.2
Anthony	2143	12.9
Wayne	2567	12.8
Iogold	2329	12.8
Silvermine	659	12.7
Swedish Select	134	12.7[a]
Minrus	2873	12.7
Richland	787	11.9
Edkin	2330	11.6
Lincoln	738	11.5
Kherson	459	10.9
Big Four	658	10.7
Victory	560	9.3
Twentieth Century	2643	6.1[b]
White Russian	551	5.1
	Barley (Triplicated 56th-acre plots)	
Glabron	4577	6.4
Wisconsin No. 38	5105	6.4
Lion	923	6.3
Regal	5030	6.2
Manchuria	244	6.1
Steigum	907	5.4
White Smyrna	658	5.3
Trebi	936	5.3
Hannchen	531	3.9
Odessa	182	3.8
Velvet	4252	3.6
Svansota	1907	3.5
Hanna	203	3.1
Nepal[a]	262	2.8[c]
Horn	926	1.2
	Emmer	
Vernal	3686	17.6
Yaroslav (Stand thin)	1526	9.1

[a] Only 2 plots. [b] Only 3 plots. [c] Computed at 48 pounds per bushel, as with other barley varieties.

Northwest winds have swept nearly all the snow covering from the winter-wheat nursery. This probably is not serious as yet, even though the temperature has dropped to 3°. Temperatures decreased gradually during the month, and the wheat plants had ample opportunity to harden.

In the last half of November 7-1/2 inches of snow, equivalent to 0.45 of an inch of rain, fell in 7 days.

Northern Great Plains Field Station, Mandan (Flax Breeding, J. C. Brinsmade, Jr.) (Nov. 17)

Mild, dry weather prevailed during the first half of November. The mean temperature during this period was 41°, which is 12° above the average mean temperature for November. Only 0.02 of an inch of precipitation, in the form of showers, was recorded.

Threshing of the flax-nursery rows harvested in October was completed November 9.

The final harvest in the after-ripening-loss experiment was made November 4. This completes the flax harvest for this season.

Seed of flax hybrids made in 1931 was sown in the greenhouse November 12.

Average wilt and rust infection and acre yields of 7 flax varieties grown in the uniform nursery in triplicate 3-row plots of 5-foot rows on both uninfested and flax-sick soil.

				Yield (bu. per acre)	
Variety	C.I. No.	Av. percent of wilted plants	Rust severity	Uninfested soil	Flax-sick soil
Redwing	320	31	Heavy	6.9±0.7	5.0±0.4
Winona	427	24	Very heavy	10.0± .5	11.0± .9
Linota	244	31	Do	7.5± .9	6.2±1.2
N.D.R.114	489	29	Do	6.3± .6	4.8± .7
Buda	326	17	Very light	9.1± .9	11.3± .5
Bison	389	19	Light	8.7±1.3	10.0± .8
Rio	280	46	0	3.9± .6	5.2± .6

(December 2)

The ground was frozen for most of the latter half of November and there has been some snow on the ground since the 20th. At the end of the month the snow was about two inches deep and was melting a little. The maximum temperature was 71°; minimum 1° above zero on the 28th. The total snowfall for the month was 3.8 inches, amounting to 0.38 of an inch of precipitation.

Winter grain went into the winter in good condition. The soil contained slightly more moisture than it did a year ago although not as much as could be desired for optimum conditions for overwintering of grain.

MONTANA

Huntley Field Station, Huntley (Dan Hansen) [Dec. 1]

Test weight and yield per acre of spring-wheat varieties grown in triplicate plots under irrigation at the Huntley Field Station, Huntley, Mont., 1931

Class and Variety	C.I.No.	Test weight (Lbs.)	Yield (Bu. per acre)
Hard Red Spring			
Champlain	2782	61.3	60.4
Reliance	7370	61.7	57.3
Marquis x Hd.Fed. N.No.666	--	60.7	56.6
Hope	8178	57.3	55.7
Marquillo	6887	59.0	50.8
Marquis	3641	60.3	48.4
Ceres	6900	62.0	48.0
Supreme	8026	60.7	43.1
Reward	8182	62.0	30.8
White			
Federation	4734	58.0	59.0
Durum			
Nodak	6519	61.7	62.8
Kubanka	1440	62.3	62.0
Mindum	5296	62.3	54.1

Judith Basin Branch Station, Moccasin (Cereal Agronomy, J. L. Sutherland) [Dec. 1]

The last seeding of winter wheat in the date-of-seeding experiment was made November 4. Soil moisture in clean fallow apparently was sufficient for germination. Seedings on October 21 had emerged November 16 before snow covered the ground.

Temperatures as low as 8° below zero were recorded in the past two weeks, but winter wheat was protected by a fair blanket of snow. Approximately six inches of snow had fallen and this was disturbed but very little by the wind. Temperatures for the month were: maximum, 72°, minimum, -8° on the 21st and 26th; precipitation in the form of snow totaled 0.77 of an inch.

The following table gives the yields of spring-wheat varieties grown in a plot experiment.

Yield of 28 spring-wheat varieties grown in four 50th-acre plots at the Judith Basin Branch Station, Moccasin, Mont., 1931

Variety	C.I.No.	Nursery No.	Test weight (Lbs.)	Yield (Bu. per acre)
Hard Red Spring:				
Power	3697	---	61.0	13.2
Marquis x Hard Federation	--	657	53.5	12.7
Do	--	666	56.0	12.5
Do	--	649	57.5	12.2
Kota x Marquis, 1656.48	10014	---	61.5	11.7
Marquis x Hard Federation	--	456	59.5	11.6
Red Bobs Sel. 32	--	---	60.0	11.4
Marquis x Hard Federation	--	708	56.0	11.1
Do	--	653	53.0	11.1
Reward	8182	---	61.0	11.0
Red Bobs Sel. 51	--	---	57.0	10.7
Kanred x Marquis	--	41	60.0	10.7
Do	--	11	61.0	10.5
Reliance	7370	---	60.5	10.4
Supreme	8026	---	60.5	10.0
Hope	8178	---	56.5	9.9
Ceres	6900	---	60.5	9.8
Marquis	3641	---	59.5	9.7
Marquillo	6887	---	59.0	9.3
Double Cross Minn. 2303	10003	---	56.0	8.4
Durum:				
Mondak	7287	---	62.5	15.6
Kubanka	1440	---	63.0	14.6
Nodak	6519	---	62.5	13.5
Mindum	5296	---	63.0	13.3
Peliss Sel. 14	10001	---	62.0	12.9
White:				
Baart	1697	---	61.0	15.0
Federation	4734	---	55.5	12.5
Hard Federation	4733	---	57.5	9.7

Northern Montana Branch Station, Havre (M. A. Bell) [Dec. 1]

Yield per acre of spring-wheat varieties grown in triplicate plots at the Northern Montana Branch Station, Havre, Mont., 1931

Class and Variety	C.I.No.	Nursery No.	Test weight (Lbs.)	Yield (Bu. per acre)
Hard Red Spring:				
Kitchener	4800	---	57.5	8.6
Marquis	3641	---	59.5	8.1
Kanred x Marquis	7372	---	59.5	8.1
Marquis x Hard Federation	----	708	57.5	7.8
Do	----	666	58.0	7.8
Komar	8004	---	60.0	7.8
Kota	6248	---	60.5	7.8
Reliance	7370	---	61.0	7.5
Marquis x Hard Federation	----	649	60.0	7.5
Hope	8178	---	58.0	7.2
Supreme	8028	---	59.0	7.0
Red Bobs No. 222	----	---	58.5	6.7
Marquis x Hard Federation	----	653	55.0	6.7
Ceres	6900	---	60.0	6.4
Marquis x Hard Federation	----	657	57.0	6.4
Marquillo	6887	---	57.5	6.4
Reward	8182	---	60.0	5.0
Durum:				
Peliss Sel. 14	1584	---	60.0	8.9
Nodak	6519	---	60.5	8.1
Kubanka	1440	---	60.5	8.1
Mindum	5296	---	61.0	7.8
Akrona	6881	---	60.0	7.0
White:				
Baart	1697	---	60.0	7.5
Federation	4734	---	57.0	7.2

WYOMING

Cheyenne Experiment Farm, Archer (A. L. Nelson) [Dec. 1]

Yields and test weight per bushel of spring-wheat varieties grown in quadruplicate plots at the Cheyenne Field Station, Archer, Wyo., 1931

Class and Variety	C.I.No.	Test weight (Lbs.)	Yield (Bu. per acre)
Hard Red Spring:			
Reward	8182	59	11.9
Garnet	----	54	11.7
Marquis	3641	58	9.9
Kota x Galgalos Sel.59	----	60	9.4
Ceres	6900	58	9.3
Supreme	8026	59	9.2
Erivan	2379	56	9.2
H-44	8177	55	8.8
Kota x Galgalos Sel.3-26	----	58	8.2
Kota x Galgalos Sel.60	----	58	8.0
Kota x Galgalos Sel.1-26	----	58	8.0
Reliance	7370	59	8.0
Hope	8178	56	5.7
Durum:			
Golden Ball Sel.	----	56	10.8
Mindum	5296	60	10.5
Akrona	6881	58	10.1
Kubanka	1440	59	9.9
Do	1516	59	9.9
Nodak	6519	59	9.7
Acme	5284	59	9.7
White:			
Kota x Galgalos Sel. 41	----	59	9.6
Dicklow x Sevier Sel.14-85	----	58	9.3
Kota x Galgalos Sel. 2-26	----	59	8.3
Kota x Galgalos Sel. 14	----	59	7.9

United States Dry Land Field Station, Sheridan (R. S. Towle) [Dec.1]

Test weight and yield per acre of spring-wheat varieties grown in triplicate plots at the United States Dry Land Field Station, Sheridan, Wyo., 1931

Class and Variety	C.I.No.	Test weight (Lbs.)	Yield (Bu. per acre)
Hard Red Spring:			
Reward	8182	55	3.3
Ceres	6900	55	2.9
Marquis x Kota 1656.48	10014	55	2.2
H-44	8177	55	2.0
Marquis	3641	54	1.8
Hope	8178	54	1.8
Supreme	8026	54	1.6
Reliance	7370	53	1.5
Kota	6248	53	1.5
Marquillo	6887	52	.9
Durum:			
Nodak	6519	55	2.5
Akrona	6881	55	2.4
Mondak	7287	54	1.5
Mindum	5296	55	1.3
Kubanka	1440	50	.4

WESTERN BASIN AND COAST AREAS (North to West and South)

WASHINGTON

Agricultural Experiment Station, Pullman (Cereal Breeding, O. A. Vogel) (Dec. 4)

In the Palouse region the only fall-sown wheats that emerged before freezing weather began on October 21 were those in the lower areas and on exceptionally good summer fallow. The varieties in the 3-row block nursery at Pullman had emerged sufficiently to determine the rows. These had been sown very shallow with a drill and consequently responded more readily to the short periods of warm weather than did those that were seeded by hand to greater depths, as in the single-row varietal plots, in the smut nurseries, and in the field plots. However, there is as yet no cause for alarm, inasmuch as the surface soil has a high moisture content and is covered with from 2 to 4 inches of heavy snow. The total precipitation recorded from October 22 to December 4 is 3.5 inches.

The yields of 31 spring-wheat varieties grown at Pullman, Walla Walla, and Pomeroy in 1931 are included in the following table. It is interesting to note that among the 11 highest yielding varieties, 5 were grown in the field plots at Pullman, and these were the 5 highest yielding of the 20 field-plot varieties. The varieties and their yields in field plots are: Onas, 37.5 bushels; White Federation, 36.9; Federation, 36.1; Baart, 35.0; and Hard Federation Sel. 31, 34.9. Ten of the 11 varieties named are classed as white wheats, Marquis x Florence 452-'29 being classed as Iowa.

Yields of 31 spring-wheat varieties grown at Pullman, Walla Walla, and Pomeroy, Wash., 1931

Variety	C.I. No.	Wash No.	Acre yield (bushels) Pullman 1-row nursery	 Pullman 3-row blocks	 Walla Walla 3-row blocks	 Pomroy 3-row blocks	Av. of 3-row blocks
White Federation	4981	1256	----	26.2	39.9	48.8	38.3
Onas	6221	2442	25.6	23.4	39.1	43.5	35.3
Florence x Marquis 452-'29	----	634x576	19.8	24.5	39.0	42.4	35.3
Baart	1697	618	23.2	24.8	38.9	41.9	35.2
Federation x Dicklow 561	10074	2786	----	22.2	39.6	43.7	35.2
Hard Federation x Dicklow 574	10073	2785	----	21.3	44.3	38.5	34.7
Florence x Marquis 371-'29	----	634x576	22.6	22.6	40.5	40.1	34.4
Federation	4734	1247	20.3	23.8	39.3	39.3	34.1
Baart x Ridit	11386	2762	15.4	20.8	37.1	40.6	32.8
Hard Federation sel. 31	8255	2593	----	27.7	32.0	38.5	32.7
Currawa	4982	2559	30.3	26.0	28.1	43.5	32.5
Marquis x Florence 487-'29	----	576x634	25.7	21.6	35.9	39.8	32.4
Hybrid 123	4511	593	16.1	21.1	42.0	31.8	31.6
Baart x Federation	8254	2783	----	22.6	32.8	38.8	31.4
Pacific Bluestem	4067	520	----	19.9	38.5	35.9	31.4
Karun	2200-1	1333	26.8	20.8	32.5	39.0	30.8
Lutescens	----	2624	22.4	24.1	32.0	35.1	30.4
Reliance	7370	2523	16.9	22.2	34.2	34.9	30.4
Garnet	8181	2662	22.9	27.7	27.6	35.6	30.3
Marquis x Turkey	----	2763	17.0	15.7	36.9	38.2	30.3
Ridit x Jenkin 400-'29	----	2324x526	10.5	15.9	42.4	30.9	29.7
Ceres	6900	2521	----	19.6	33.6	35.6	29.6
Jenkin	5177	526	16.1	21.6	37.8	29.1	29.5
Bunyip	5125	2782	16.8	24.8	27.8	35.7	29.4
Hussar x Jenkin 416-'29	----	2312x526	16.8	20.5	35.2	31.7	29.1
Marquis x Florence 333-'29	----	576x634	17.6	20.6	29.6	37.2	29.1
Red Chaff sel. 154	10072	2784	----	20.8	35.9	30.7	29.1
Hard Federation	4733	1246	24.1	22.8	28.1	35.7	28.9
Marquis	3641	576	18.3	18.6	32.8	35.4	28.9
Ridit x Baart 407-'29	----	2324x618	16.7	17.2	31.5	26.8	25.2
Bluestem x Hussar 414-'29	----	265x2312	1[illegible]2	19.2	28.1	26.0	[illegible]4.4

OREGON

Sherman County Branch Station, Moro (Cereal Agronomy, D. E. Stephens) (Dec. 2)

For more than two weeks the weather has been cold and six inches of snow have fallen. The temperature has been as low as 4° above. Much of the moisture probably will be lost as the ground is frozen to a depth of 6 to 8 inches. None of the fall-sown grains had emerged before the cold weather.

Agricultural Experiment Station, Corvallis (Foot Rots of Wheat, Roderick Sprague) (Nov. 13)

The fall sowings of winter cereals in Cercosporella-infested ground were made on September 1 and 23. This year all the field work is being done on High Prairie, in Washington across the Columbia River from The Dalles, Oreg. The fine sandy loam harboring the fungus is interspersed with small patches of a less friable, lighter-colored soil which was very dry and was therefore avoided in sowing. This type of soil usually is free from footrot. The main soil body was in good condition and there was rapid and excellent emergence.

At Corvallis, 110 varieties and selections were sown in fine sandy loam and inoculated by scattering a heaping shovelful of infected soil along each rod row. Sowings made on September 26 and October 5 emerged within two weeks because of timely rains.

A combined experiment on footrot and rust of wheat and oats was sown September 30 and October 17 in the Alsea Valley, west of Corvallis. The footrot, principally of oats, is present on a red acid soil. The exact nature of the footrot is undetermined.

UTAH

Agricultural Experiment Station, Logan (Wheat Improvement, R. W. Woodward) (Nov. 30)

The first half of November was very pleasant and was ideal for the growth of late pasture and winter wheat. Temperatures as high as 67° F. were recorded. After a few days of rain and snow, a cold spell started on the 20th, with a minimum of -8°. From 4 to 6 inches of snow still remain on the ground, affording some protection against the extreme cold. It is reported that there are from 2 to 3 feet of snow in the mountains.

Yields of grain-sorghum varieties grown in replicated nursery rows on irrigated land, 1931

Variety	Average yield (Bu. per acre)	Test weight (Lbs.)	Height (In.)
Dwarf Yellow milo	101.4	50	64
Red Amber sorgo	100.7	48	90
Sooner milo	99.9	53	54
Standard feterita	74.7	52	80
Black Amber sorgo	73.8	48-1/2	100
Dwarf hegari	69.7	49	60
Dakota Amber sorgo	64.6	46	68
Western Blackhull kafir	64.1	50	62
Dwarf White durra	62.7	53	48
Yellow kafir	62.0	53	60
Dawn kafir	59.3	52	64
Dwarf Freed	57.2[a]	41	66
Freed sorgo	41.2[a]	35	88

[a] Injured by birds

The season of 1931 was extremely warm and therefore was unusually favorable to the sorghum crop.